

ADDITIONAL NOTES ON THE GENUS VITEX. VIII

Harold N. Moldenke

VITEX KUYLENII Standl.

Additional bibliography: Moldenke, *Phytologia* 16: 502. 1968.

Additional citations: GUATEMALA: Izabal: Jones & Facey 3500 (W-2565868); Jones, Proctor, & Facey 3031 (W-2565867). BRITISH HONDURAS: Gentle 5551 (Mi).

VITEX KWEICHOWENSIS P'ei

Additional bibliography: Moldenke, *Phytologia* 15: 251. 1967.

The Tsiang 5831 collection, cited below, is marked "paratype" on its label, but the original description of the species by P'ei plainly designated Tsiang 6317 as the type collection. I see no valid reason for giving any other collection a type designation.

Additional citations: CHINA: Kweichow: Tsiang 5831 (W-1575154).

VITEX LANUGINOSA Mohl

Synonymy: Vitex lanuginosus Mohl, *Beitr. Anat. & Physiol. Gew.* 85. 1834.

Bibliography: Mohl, *Beitr. Anat. & Physiol. Gew.* 85. 1834; Mohl, *Ann. Sci. Nat. Bot.*, ser. 2, 3: 319. 1835; Selling, *Bishop Mus. Spec. Publ.* 38: 274, 275, & 411. 1947.

I know nothing about this plant beyond what is given in the bibliography above. It seems most probable that the binomial is the result of a typographic error or an error in copying.

VITEX LEUCOXYLON L. f., *Suppl. Pl.* 293. 1781 [not V. leucoxyton

Blanco, 1895, nor Naves, 1918, nor Roth, 1956, nor Roxb., 1814, nor Span., 1856, nor Schau., 1893].

Additional synonymy: Vitex leucoxyton Willd. ex Roxb., *Fl. Ind.*, ed. 2 [Carey], 3: 74--75. 1832.

Additional & emended bibliography: J. F. Gmel. in L., *Syst. Nat.*, ed. 13, pr. 1, 2: 963 (1789) and pr. 2, 2: 963. 1796; Pers., *Sp. Pl.* 3: 361. 1819; Steud., *Nom. Bot.*, ed. 1, 888. 1821; Roxb., *Fl. Ind.*, ed. 2 [Carey], 3: 74 & 75. 1832; Gamble, *Man. Ind. Timb.*, ed. 1, 298. 1881; Watt, *Econ. Prod. India* 5: 294 (1883), 6: 191 (1883), and 7: 255. 1883; Gamble, *Man. Ind. Timb.*, ed. 2, 542. 1902; Prain, *Beng. Pl.*, ed. 1, 2: 832 & 833. 1903; Gamble, *Fl. Presid. Madras* 2: 1102 & 1103. 1924; Stapf, *Ind. Lond.* 6: 478 & 489. 1931; H. F. MacMillan, *Trop. Plant. & Gard.*, ed. 5, pr. 3, 197, 198, & 529. 1962; Prain, *Beng. Pl.*, ed. 2, 2: 621, 622, & 1012. 1963; Sen & Naskar, *Bull. Bot. Surv. India* 7: 60. 1965; Sebastine & Ramamurthy, *Bull. Bot. Surv. India* 8: 180. 1966; Moldenke, *Phytologia* 15: 253 & 316 (1967) and 16: 500 & 501. 1968.

Jain (1963) records this species from Madhya Pradesh, India, while Sebastine & Ramamurthy found only a "few" in Madras, citing a National Herbarium number 16096. Prain (1963) records it from

Orissa, but comments "on islands in the river Mahanadi; perhaps only introduced". He cites the first of the Watt references given by me in the bibliography above as "E. D. 5: 160", but this appears to be a paragraph reference, not a page reference! An additional vernacular name recorded for the plant is "kaddu-nochchi".

Additional citations: CULTIVATED: India: Herb. Drake s.n. [Hort. Bot. Calcutt.] (W--2497125).

VITEX LIMONIFOLIA Wall.

Additional synonymy: Vitex limonifolia "Wall. ex Kurz" apud Deb, Bull. Bot. Surv. India 3: 315. 1961. Vitex aminifolia Wall., in herb.

Additional bibliography: Gamble, Man. Ind. Timb., ed. 1, 296 (1881) and ed. 2, 541. 1902; A. Chev., Cat. Pl. Jard. Bot. Saigon 36. 1919; Deb, Bull. Bot. Surv. India 3: 315. 1961; Moldenke, Phytologia 15: 253--254. 1967.

Chevalier (1919) records this species as cultivated in Vietnam under the common name of "binh linh vàng". In Burma it is called "kyungaukme". In Thailand the name "tin nok" is applied both to this species and to V. peduncularis Wall. Deb (1961) says of the plant "shoots hairy or wooly, petiole broadly winged, panicles long branched, fulvous hairy" and cites Mukerjee 2943.

Banternsuk describes the plant as a large tree, common in dry deciduous forests in Thailand; Rock also refers to it as a common tree in that country. It has been collected in anthesis also in July and December. The corollas on Banternsuk 6 are described as having been "purple".

Additional citations: BURMA: Herb. Burma Forest School 22 (W--1716644); Huk s.n. [Burma, 1890] (W--73891). THAILAND: Banternsuk 6 [Herb. Roy. Forest Dept. 1991] (W--2064782); Rock 466 (W--1171368, W--1171369).

VITEX LONGISEPALA King & Gamble

Additional bibliography: Moldenke, Phytologia 15: 254--255 & 325. 1967.

VITEX LUCENS T. Kirk

Additional bibliography: Allan, Fl. N. Zeal. 1: 959--960. 1961; D. Price, Contrib. N. S. Wales Nat. Herb. 3: 194. 1961; Seikel, Chow, & Feldman, Phytochem. 5: 439--455. 1966; J. S. Beard, Journ. Ecol. 55: 277. 1967; Seikel, Chow, & Feldman, Biol. Abstr. 48: 9450. 1967; Moldenke, Phytologia 15: 255--256 (1967) and 16: 501. 1968.

Seikel and her associates (1966) report that the wood of this species is a rich source of glycoflavonoid (C-glycosylflavonoid) compounds. In addition to the previously described apigenin derivatives vitexin (4',5,7-trihydroxyl-8-C-glucopyranosylflavone) and isovitexin (the 6-C-glucosyl isomer), the corresponding luteolin derivatives orientin and isoorientin have been discovered. Compounds of vitexin and orientin, which have xylose attached to

the 8-glucosyl group, are also present. The most unusual constituents are wight compounds which appear to be 6,8-di-C-glycosyl derivatives of apigenin and luteolin. Several compounds in each series are inter-convertible in hot acidic solution.

Beard (1967) speaks of a V. glabrata which is one of the main members of the broadleaf tree level in Australia along with Eucalyptus and Terminalia. He is undoubtedly here referring to V. lucens.

VITEX MADIENSIS Oliv.

Additional bibliography: A. Chev., Sudania 1: 11. 1911; Moldenke, Phytologia 15: 257--260. 1967.

VITEX MADIENSIS var. BAUMII Pieper

Additional bibliography: Moldenke, Phytologia 15: 258--259. 1967.

Additional citations: ANGOLA: Bie-Cuando-Cubango: E. J. Mendes 2632 (Rf).

VITEX MADIENSIS var. MILANJIENSIS (Britten) Pieper

Additional bibliography: Moldenke, Phytologia 15: 259--260. 1967.

The corollas on Lewalle 1115 are described as having been "rose violacé clair", on his 1328 as "bleuté", on 2296 as "blanc sale", and on 2355 as "blanc et bleu". This collector has encountered this plant growing at 900 meters altitude.

Additional citations: BURUNDI: Lewalle 403 (Ac), 1115 (Ac), 1328 (Ac, Rf), 2296 (Ac), 2355 (Ac, Rf). ANGOLA: Huila: Gossweiler 13444 (Rf).

VITEX MASONIANA Pittier

Additional bibliography: Moldenke, Phytologia 15: 260. 1967.

Recent collectors describe this plant as a tree, 50--75 feet tall [Allen says "50 m.", but surely in error], with a trunk diameter of 6--15 inches at breast height, coarse leaves, and fruit brown and "fruity in odor", green when immature, growing at the edge of roads, at 15--400 meters altitude, in anthesis also in February and March, in immature fruit in June and in mature fruit in October. Allen describes it as "infrequent" in Darién. The corollas are described as having been "white" on J. A. Duke 8387, "lavender" on P. H. Allen 265, and "blue" on P. H. Allen 4588 and J. A. Duke 9784. Vernacular names for the tree are reported as "cuajado", "kwidi machi", and "pu-pu-chiru". The specific epithet is often uppercased. Duke assures us that the tree is not used by the Chocoi Amerinds in Panama.

The H. Pittier 6604, distributed as V. masoniana, is actually V. floridula Duchass. & Walp.

Additional citations: PANAMA: Darien: P. H. Allen 265 (E-1191569), 4588 (E-1572218); J. A. Duke 8387 (Rf), 13116 (Ac), 14639 (Ac, E-1909076); Stern, Chambers, Dwyer, & Ebinger 299 (E-

1757555), 903 (E-1757560). Panamá: J. A. Duke 14489 (E-1909075). COLOMBIA: Chocó: J. A. Duke 9784 (Oh).

VITEX MEGAPOTAMICA (Spreng.) Moldenke

Additional bibliography: Schnitzl., Icon. Fam. Nat. Reg. Veg. 137. 1856; Rosengurtt, Estud. Prad. Nat. Urug. 5: 394. 1946; Rios de Moura Baptista, Anais XV Congr. Soc. Bot. Bras. 200. 1964; Dombrowski & Kuniyoshi, Araucariana 1: 14. 1967; Anon., Biol. Abstr. 48 (20): S.181. 1967; Rimpler & Schulz, Tetrahed. Lett. 22: 2033-2035. 1967; Rimpler & Schulz, Biol. Abstr. 48: 9253. 1967; Moldenke, Phytologia 15: 261-263. 1967.

Recent collectors describe this plant as a tree, 8 m. tall, growing in forests and at forest margins, at 500 to 1000 meters altitude, with the vernacular names "flor anil" and "taruffa".

Additional citations: BRAZIL: Paraná: Hatschbach 15363 (W-2564724). Rio Grande do Sul: Rambo 37993 (B), 44520 (B), 49270 (B), 51795 (B). Santa Catarina: Smith & Klein 14164 (N). ARGENTINA: Misiones: A. G. Schulz 7151 (N).

VITEX MEGAPOTAMICA f. ALBIFLORA Moldenke

Additional bibliography: Moldenke, Phytologia 15: 263. 1967.

Additional citations: BRAZIL: Paraná: Hatschbach 13392 (W-2564667); Hatschbach & Guimarães 15151 (W-2563953, Z).

VITEX MICRANTHA Gürke

Additional bibliography: Cave, Ind. Pl. Chromosome Num. 1: 54. 1958; Moldenke, Phytologia 15: 263-264 & 314. 1967; N. H. A. Cole, Bull. Inst. Fond. Afr. Noire 30: 107. 1968.

Cole (1968) reports that this species grows among trees in matured secondary forests on slopes in Sierra Leone, flowering in February and March. Cave (1958) reports the diploid chromosome number for the species as 32.

VITEX MOLLIS H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 199. 1817.

Additional & emended synonymy: Vitex mollis Humb. & Bonpl. apud Steud., Nom. Bot., ed. 1, 888. 1821. Vitex trifolia Sessé & Moc. ex Moldenke, Prelim. Alph. List Invalid Names 52, in syn. 1940 [not V. trifolia Graham, 1966, nor Hemsl., 1949, nor L., 1753, nor L. f., 1895, nor Moon, 1895, nor Vahl, 1941, nor "sensu Matsumura & Hayata", 1963].

Additional & emended bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 199 (1817) and ed. quart., 2: 245. 1818; Steud., Nom. Bot., ed. 1, 888. 1821; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; Moldenke, Phytologia 15: 264-267 (1967) and 16: 495. 1968.

It should be noted that the H.B.K. reference dates given above have been authenticated by consultation of the work on this subject by Barnhart (1902).

The corollas are described as having been "purple" on J.

Rzedowski 2207 and the plant was collected in a deciduous tropical forest. A note on the sheet states that "one digit [is] missing in [the] collection no. given". What that missing digit is has not been determined.

Additional citations: MEXICO: Chiapas: F. Miranda 8184 (W—2508354). México: J. Rzedowski 2207 (M1). Morelos: Pringle 6993 (Ms—30948).

VITEX MOMBASSAE Vatke

Additional bibliography: Watt & Breyer-Brandwijk, *Med. & Poison. Fl. S. Afr.*, ed. 2, 1055 & 1454. 1962; Moldenke, *Phytologia* 15: 266—267. 1967; Friedrich-Holzhammer in *Merxm., Prodr. Fl. Sudw. Afr.* 122: 10. 1967.

Additional citations: ANGOLA: Huila: E. J. Mendes 1625 (Rf). PORTUGUESE EAST AFRICA: Mozambique: M. F. Correira 119 (Rf).

VITEX NEGUNDO L., *Sp. Pl.*, ed. 1, 638. 1753 [not V. negundo Curtis, 1832, nor Lour., 1934, nor Noronha, 1790].

Additional & emended synonymy: Vitex negunda Willd. ex Roxb., *Fl. Ind.*, ed. 2 [Carey], 3: 70. 1832 [not V. negunda Mill., 1768]. Vitex leucoxydon Blanco apud Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 2: 1214, in syn. 1895 [not V. leucoxydon L., 1829, nor L. f., 1781, nor Roth, 1956, nor Roxb., 1814, nor Schau., 1893, nor Span., 1856, nor Wall., 1847, nor Willd., 1832]. Vitex negundo L. f. apud Naithani, *Bull. Bot. Surv. India* 8: 260. 1966. Vitex trifolia Graham ex Chavan & Oza, *Mahar. Savaj. Univ. Baroda Bot. Mem.* 1: 187, in syn. 1966 [not V. trifolia Hemsl., 1949, nor L., 1753, nor L. f., 1895, nor Moon, 1895, nor Sessé & Moc., 1940, nor Vahl, 1941, nor "sensu Matsumura & Hayata", 1963].

Additional & emended bibliography: J. F. Gmel. in L., *Syst. Nat.*, ed. 13, pr. 1, 2: 963 (1789) and pr. 2, 2: 963. 1796; Pers., *Sp. Pl.* 3: 361. 1819; Steud., *Nom. Bot.*, ed. 1, 888. 1821; Roxb., *Fl. Ind.*, ed. 2 [Carey], 3: 70 & 71. 1832; Hook. & Arn., *Bot. Beech. Voy.* 206. 1836; Schnitzl., *Icon. Fam. Nat. Reg. Veg.* 137. 1856; Gamble, *Man. Ind. Timb.*, ed. 1, 297. 1881; Watt, *Econ. Prod. India* 5: 294 (1883) and 7: 255. 1883; Vidal, *Phan. Cuming. Philip.* 134. 1885; Watt, *Dict. Econ. Prod. India* 6 (4): 248—250. 1893; Gamble, *Man. Ind. Timb.*, ed. 2, 539—540. 1902; Prain, *Beng. Pl.*, ed. 1, 2: 832 & 833. 1903; Duthie, *Fl. Upper Gang. Plain* 2: 224. 1911; R. N. Parker, *For. Fl. Punjab* 394. 1918; A. Chev., *Cat. Pl. Jard. Bot. Saigon* 36. 1919; Gamble, *Fl. Presid. Madras* 2: 1101 & 1102. 1924; Hosokawa, *Journ. Soc. Trop. Agr. Taiwan* 6: 206. 1934; Selling, *Bishop Mus. Spec. Publ.* 38: 274, 275, & 411. 1947; Li & Keng, *Taiwania* 1 (2—4): 127. 1950; Kuck & Tongg, *Mod. Trop. Gard.* 77 & 236. 1955; Encke, *Pareys Blumengärtn.*, ed. 2, 446. 1960; Cave, *Ind. Pl. Chromosome Numb.* 2: 137. 1961; Deb, *Bull. Bot. Surv. India* 3: 315. 1961; H. F. MacMillan, *Trop. Plant. & Gard.*, ed. 5, pr. 3, 198 & 366. 1962; Prain, *Beng. Pl.*, ed. 2, 2: 621, 622, & 1012. 1963; Sharma & Mukhopadhyay, *Journ. Genet.* 58: 359, 366, 376, 383, & 539, pl. 11, fig. 30. 1963; Maheshwari,

Fl. Delhi 281. 1963; A. Banerjee in Lahiri, West Beng. Forests 56. 1964; Puri, Jain, Mukerjee, Sarup, & Kotwal, Rec. Bot. Surv. India 19: 107. 1964; Cave, Ind. Pl. Chromosome Numb. 2: 331 (1964) and 2: 438. 1965; Banerji, Rec. Bot. Surv. India 19: 75. 1965; Sen & Naskar, Bull. Bot. Surv. India 7: 60. 1965; M. S. Mani, Bull. Bot. Surv. India 7: 114. 1965; B. C. Stone, Micronesica 2: 132. 1966; S. V. Ramaswami, Study Flow. Pl. Bangalore [thesis] xxix, 1029--1039, & 1467. 1966; Panigrahi, Bull. Bot. Surv. India 8: 3, 4, & 11. 1966; Panigrahi & Joseph, Bull. Bot. Surv. India 8: 151. 1966; Matthew, Bull. Bot. Surv. India 8: 164. 1966; Balapure, Bull. Bot. Surv. India 8: 190 & 194. 1966; Jain & De, Bull. Bot. Surv. India 8: 247. 1966; Naithani, Bull. Bot. Surv. India 8: 260. 1966; Rao & Rabha, Bull. Bot. Surv. India 8: 301. 1966; J. L. Ellis, Bull. Bot. Surv. India 8: 337. 1966; Santapau, Bull. Bot. Surv. India 8: 39. 1967; Moldenke, Biol. Abstr. 48: 10560. 1967; R. R. Stewart, Pakistan Journ. Forest. 17: 515. 1967; Moldenke, Phytologia 15: 304--311 (1967) and 16: 493--495, 500, & 501. 1968; Moldenke, Biol. Abstr. 49: 851 (1968) and 49 (2): 3. 72 & S.186. 1968.

It should be noted here that the Vitex trifolia of Hemsley, referred to in the synonymy above, as well as that of "sensu Matsumura & Hayata", is a synonym of V. trifolia var. simplicifolia Cham., that accredited to Moon is V. altissima L. f., that accredited to Vahl is V. triflora Vahl, that of Sessé & Mociffo is V. mollis H.B.K., while that of Linnaeus is a valid species, with the homonym accredited the Linnaeus the younger as a synonym. The V. leucoxyton of Linnaeus the younger is a valid species, with the homonym accredited to Linnaeus the elder as a synonym, as well as that ascribed to Willdenow, while the V. leucoxyton accredited to Schauer is V. glabrata R. Br., that ascribed to Roth and to Roxburgh is V. glabrata var. bombacifolia (Wall.) Moldenke, that accredited to Spanoghe is V. parviflora A. L. Juss. and that ascribed to Wallich is V. leucoxyton L. f.

Aggarwal & Mukherjee (1963) state that this plant, along with Clerodendrum inerme, Cyperus stoloniferus, and Sporobolus maderaspatanus, play an important rôle in stabilizing dunes on Rameswaram Island and Krusadi Island, but surely the typical form of the species is not here being referred to -- probably it is V. trifolia var. simplicifolia Cham. to which reference is here being made.

Balapure (1966) records V. negundo from Madhya Pradesh, where he found it growing in moist shady places along riverbanks and "very common" in waste places, along roadsides, and on riverbanks. Rao & Sastry (1964) also refer to it as common along watercourses in that state. Ellis (1966) records it from Andhra Pradesh and cites a National Herbarium no. 15911. Jain (1963) found it in Gujerat, Rao & Rabha (1966) in Assam, and Santapau (1967) in Saurashtra. Bhattacharyya (1964) reports it as "common" in Uttar Pradesh. Panigrahi and his associates (1964) found it to be "a-

bundant on river banks" in Orissa; Lau describes it as abundant in dry sandy soil on Hainan Island.

Jain & De (1966) report that in West Bengal, where it is known as "begna" and "ichur", a decoction is made of the leaves which is given with Andrographis and/or Hyoscyamus to cure coughs, gout, and symptoms related to colds and the leaves are used for fumigating huts to remove flies and mosquitoes, citing Jain 7903. Mukerjee (1965) also avers that V. negundo is a common shrub in the villages of West Bengal. Kuck & Tongg (1955) point out that it is wind-resistant and grows rapidly and irregularly. Janardhanan (1963) found it to be scarce in Maharashtra, where it is called "nirgud" or "nirgundi", and where the leaves are used as a tonic and vermifuge and the leaf-juice by the local population to remove fetid discharges and worms from ulcers.

Joseph (1963) found the plant "fairly common near streams" in Madhya Pradesh, while Malick (1966) describes it as "common" in West Bengal and cites Chatterji 3. Panigrahi & Joseph (1966) claim that it is "abundant" in Nefa and cite a National Herbarium no. 16788. Panigrahi (1966) reports it as "abundant on dry open flat hilltops" and on hill slopes in Bihar and cites no. 11891. Ramaswamy (1964) encountered it growing along riverbanks with Phyla nodiflora under a thick growth of Salix tetrasperma in Bangalore and also in hedges there. Naithani (1966) refers to it as "rare" and cites no. 23873. Vidal (1885) cites Cuming 1886. Deb (1963) reports that the species inhabits moist and dry deciduous forests.

Maheshwari (1963) describes V. negundo as it occurs in Delhi, India: "Flower clusters lax, in a widely spreading panicle; leaflets mostly broader [than in V. agnus-castus]....A shrub or small tree. Branchlets quadrangular, densely white-tomentose. Leaflets 3-5, 10-17 x 2.5-4 cm., petiolulate, lanceolate, acuminate, white-tomentose beneath. Flowers lavender to blue, in loose clusters, arranged in a large terminal panicle. Drupes black. Planted in gardens, lawns and along railway lines. Common in the Bangar tract on raised bunds along the roads. The warmed leaves are applied to painful and rheumatic swellings; the macerated ones are used as cooling medicine on the forehead in headache. Local name: Sambhalu. Flowers: Major part of the year!" He cites Maheshwari 118 & 689. Banerji (1965) cites his no. 536.

Prain (1963) records the species from Bihar and Chota Nagpur and gives the following additional vernacular names for it: "begunia" and "sandbhalu". Banerjee (1964) records the name "sindubara" for it, while Stewart (1967) tells us that the species is very common "in graveyards and near streams" in Swat, Pakistan, while Chevalier (1919) reports it cultivated in Vietnam under the name "cây ngũ trầu".

Cave (1961, 1964, 1965) reports the haploid number of chromosomes as 12 and the diploid as 26 and 34.

MacMillan (1962) reiterates that in India the leaves and bark of this plant are used in the treatment of toothache, rheumatism,

and eye diseases, as well as for a tonic, carminative, and vermifuge. Watt (1893) includes V. bicolor Willd. and V. arborea Desf. in the synonymy of V. negundo. The latter, however, is a synonym of V. negundo f. alba P'ei, while the former is V. trifolia var. bicolor (Willd.) Moldenke

It should perhaps be noted here that the V. negundo accredited to Curtis is actually V. negundo var. heterophylla (Franch.) Rehd., that accredited to Loureiro is V. quinata (Lour.) F. N. Will., while that of Noronha is V. pinnata L.

Encke (1960) describes V. negundo as follows: "Indien bis Ostasien und Malesien. Juli--August. Bis 4 m hoher, baumartiger Strauch. Blätter fingerförmig-5zählig, mit linealisch-lanzettlichen, gezähnten, 5--10 cm langen Blättchen. Blüten in endständigen, 15--20 cm langen zusammengesetzten Rispen, lila oder lavendelblau."

The species has been collected in fruit in July as well as in the months previously recorded. Ching states that it is "common" along roadsides in Kwangsi, while Rodin describes it as "common along streambanks" in Swat. The corollas are described as having been "pink" on Liang 64661, "purplish" on R. C. Ching 5450, "blue-purple" on Koelz 4137, "bluish" on Taam 1728, and "blue" on Rodin 5427, Tsang s.n. [Herb. Lingnan Univ. 16629], and E. H. Wilson 10972. A note accompanying Clemens & Clemens 3804 indicates that the species occurs wild and also in cultivation in Annam.

Material has been widely misidentified and distributed in herbaria under the names V. agnus-castus L., V. incisa Lam., V. negundo var. cinnabifolia (S. & Z.) Metcalf, V. trifolia L., and even Buddleia asiatica Lour.

There seem definitely to be at least two forms of what is currently being regarded as the typical form of this species. One of these bears a striking similarity to the typical form of V. trifolia L. [e.g., Babu Ram 99, Hafizthan s.n. [Balakoli], Rodin 5427, S. N. Singh 18 [3.8.24 & 11.1.25], and R. R. Stewart 17067].

The other form is more typical of what I regard as V. negundo in the strict sense. Examples are Barchet 556, H. H. Bartlett 6267, R. C. Ching 5450, Clemens & Clemens 3804, Fraser 196, A. Henry 1142 & 9750, Koelz 3147, C. O. Levine s.n. [Herb. Canton Chr. Coll. 376], Liang 64661, Nagazawa s.n. [July 1928], Peng, Tak, & Kin s.n. [Herb. Canton Chr. Coll. 12670], Poilane 8130, Taam 1728, Tanaka 97, Tanaka & Shimada 17878, E. H. Wilson 1697, and Ying 1263. The complex needs further study. It is very possible that V. negundo and V. trifolia hybridize where they grow together.

Barchet 556 appears to be a mixture with var. cannabifolia (Sieb. & Zucc.) Hand.-Mazz. The Rock 3880, 5055, & 9044, distributed originally as V. negundo, are all cotypes of f. alba

P'ei; Ling 1721 & s.n. [Herb. Univ. Nanking 9386], as well as Herb. Univ. Nanking 9366, appear to be var. heterophylla (Franch.) Rehd.; and Chiao 2704, R. C. Ching 2429, Farges s.n., Fung 21196, Herb. Canton Chr. Coll. 894 & 1420, Herb. Univ. Nanking 1726, 2387, 14054, 14580, & 18774, Petelot 1170, Rock 6981, Tsang 27733 & 27843, Tsiang & P'ei 5725, Tsui 303, E. H. Wilson 790 & 2702, and Zimmermann 2 appear to represent var. intermedia (P'ei) Moldenke. It is, however, very obvious that the named varieties grade into each other in most confusing fashion.

I am not at all certain of the true identity of the Herb. Post s.n. [Hamath, Aug. 1884], cited below. It was originally identified and distributed as V. agnus-castus L., but most certainly cannot be that species in its restricted sense. It may be a mature fruiting specimen of V. agnus-castus var. pseudo-negundo Hausskn., but it also greatly resembles V. negundo.

Additional citations: SYRIA: Herb. Post s.n. [Hamath, Aug. 1884] (W-805058). PAKISTAN: Swat: Rodin 5427 (W-2242322). INDIA: East Punjab: Koelz 3147 (W-1667937), 4137 (W-1607992). Mussoorie: R. R. Stewart 17067 (W-1992176). Siwalik & Jaunsar: Babu Ram 99 (W-1170327). Uttar Pradesh: Crovalti 81 [July] (W-1372659), 81 [November] (W-1372659); Mohammed s.n. [13.7.29] (W-1716645), s.n. [5.11.29] (W-1716645); K. Singh 80 (W-1347706); S. N. Singh 18 [3.8.24] (W-1347745), 18 [11.1.25] (W-1347745). CEYLON: Fraser 196 (W-73890). CHINA: Chekiang: Barchet 556, in part (W-596118). Hupeh: E. H. Wilson 1241 (W-596717), 2701 (W-777469). Kiangsi: E. H. Wilson 1697 (W-777294). Kwangsi: R. C. Ching 5450 (W-1248670). Kwangtung: C. O. Levine s.n. [Herb. Canton Chr. Coll. 376] (W-778695); Peng, Tak, & Kin s.n. [Herb. Canton Chr. Coll. 12670] (W-1247923); Ying 1263 (W-1513156). Yunnan: A. Henry 9750 (W-457296). CHINESE COASTAL ISLANDS: Hainan: S. K. Lau 298 (W-1629164); Liang 64661 (W-1671297). Lantau: Tsang s.n. [Herb. Lingnan Univ. 16629] (W-1249326). HONGKONG: Taam 1728 (W-2244633). INDOCHINA: Annam: Clemens & Clemens 3804 (W-1427683, W-1427684); Poilane 8130 (W-2394576). WESTERN PACIFIC ISLANDS: FORMOSA: H. H. Bartlett 6267 (W-1248580); Nagazawa s.n. [July 1928] (W-2063380); Nakahara s.n. [1905] (W-1053769); A. Henry 1142 (W-455567); Tanaka 97 (W-1528110); Tanaka & Shimada 17878 (W-1700296); E. H. Wilson 10972 (W-1054281). CULTIVATED: India: Voigt 272 (W-2126892). LOCALITY OF COLLECTION UNDETERMINED: Hafizthan s.n. [Balakoli] (W-1239953).

VITEX NEGUNDO f. ALBA P'ei

Additional bibliography: Watt, Dict. Econ. Prod. India 6 (4): 248. 1893; Moldenke, Phytologia 15: 308. 1967.

This plant has been collected at altitudes of 8000 to 10,000

feet, flowering in August. The corollas are described as having been "blue" on Rock 10465, "bluish" on Rock 5055, "pale-purple" on Rock 3880, and "lavender-blue" on Rock 9044. It is therefore evident that the statement made by me in *Phytologia* 15: 308 (1967) concerning V. arborea Fischer and V. arborea Desf. belonging here because the represent white-flowered plants is entirely incorrect. If Schauer and Jackson are correct in placing these binomials in V. negundo, then they appear to represent a white-flowered form for which I am proposing the name V. negundo f. albiflora Moldenke.

Additional citations: CHINA: Yunnan: J. F. C. Rock 3880 (W-1332136--cotype), 5055 (W-1332137--cotype), 9044 (W-13321138--cotype), 10465 (W-1332139).

VITEX NEGUNDO f. ALBIFLORA Moldenke, nom. nov.

Synonymy: Vitex arborea Fischer ex Desf., *Cat. Hort. Paris*, ed. 3, 391-392. 1829 [not V. arborea Bréon, 1955, nor Brown, 1806, nor Roxb., 1814]. Vitex arborea Desf. apud Schau. in A. DC., *Prodr.* 11: 685, in syn. 1847.

Bibliography: Desf., *Cat. Hort. Paris*, ed. 3, 391-392. 1829; Schau. in A. DC., *Prodr.* 11: 685. 1847; Watt, *Dict. Econ. Prod. India* 6 (4): 248. 1893; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 2: 1213 (1895) and pr. 2, 2: 1213. 1946; Moldenke, *Phytologia* 5: 486. 1957; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 3, 2: 1213. 1960; Moldenke, *Phytologia* 15: 308. 1967.

This form differs from the typical form of the species in having white corollas.

As yet I have not seen the type of this taxon, doubtless preserved in the Paris herbarium, but I am assuming that Schauer, Watt, and Jackson are correct in placing it in V. negundo.

It should be noted here that the V. arborea ascribed to Bréon belongs in the synonymy of V. beraviensis var. acuminata, that accredited to Brown belongs in the synonymy of V. heptaphylla A. L. Juss., while that of Roxburgh is V. pinnata L.

VITEX NEGUNDO var. CANNABIFOLIA (Sieb. & Zucc.) Hand.-Mazz.

Additional synonymy: Vitex negundo var. cinnabifolia (S. & Z.) Metcalf ex Moldenke, *Phytologia* 17: 15 & 17, in syn. 1968

Additional bibliography: Kitamura & Okamoto, *Col. Illustr. Trees & Shrubs Japan* 221. 1960; Moldenke, *Phytologia* 15: 308 (1967) and 17: 15 & 17. 1968.

An additional vernacular name recorded for this plant is "nindinboku". Material of this variety has been widely misidentified and distributed as V. incisa Lam. and V. negundo f. intermedia P'ei. Zimmermann 442 appears to be a mixture with var. intermedia -- at least, on most specimens the leaf serration seems to be far too uniform for var. intermedia.

Additional citations: CHINA: Chekiang: Barchet 556, in part (W-

596117). Shantung: Zimmermann 442, in part (W--795490). HONGKONG: C. Wright s.n. [Hong Kong] (W--44916). WESTERN PACIFIC ISLANDS: JAPAN: Honshiu: Collector undetermined 365 (W--73902), s.n. [Sept. 1, 1890] (W--206182), s.n. [Yanaka, Musashi, 18 August 1910] (W--1178281); J. Matsumura s.n. [Tokio, Octob. 13, 1879] (W--447605); Maximowicz s.n. [Yokohama, 1862] (W--73892).

VITEX NEGUNDO var. HETEROPHYLLA (Franch.) Rehd.

Additional & amended synonymy: Vitex sinuata Raeusch. ex Steud., Nom. Bot., ed. 1, 888. 1821. Vitex negundo Curtis ex Roxb., Fl. Ind., ed. 2 [Carey], 3: 72, in syn. 1832 [not V. negundo L., 1753, nor Lour., 1934, nor Noronha, 1790, nor Royle, 1919, nor Willd., 1918]. Vitex incisa Willd. ex Roxb., Fl. Ind., ed. 2 [Carey], 3: 72. 1832. Vitex chinensis Banks ex Roxb., Fl. Ind., ed. 2 [Carey], 3: 72, in syn. 1832.

Additional bibliography: J. F. Gmel. in L., Syst. Nat., ed. 13, pr. 1, 2: 963 (1789) and pr. 2, 2: 963. 1796; Pers., Sp. Pl. 3: 360--361. 1819; Steud., Nom. Bot., ed. 1, 888. 1821; Roxb., Fl. Ind., ed. 2 [Carey], 3: 72--73. 1832; Watt, Dict. Econ. Prod. India 6 (4): 248 & 251. 1893; Bonstedt, Pareys Blumengärtn., ed. 1, 278. 1932; Encke, Pareys Blumengärtn., ed. 2, 2: 446. 1960; Moldenke, Phytologia 15: 307 & 309--311. 1967; Moldenke, Biol. Abstr. 49 (2): S.186. 1968.

Encke (1960) says of this variety: "In Kultur wohl nur durch die strauchige var. heterophylla (Franch.) Rehd. (syn. var. incisa (Bunge) Clarke; V. incisa Bunge). Nord- und Centralchina, Mandschurei, Philippinen. Mit eingeschnitten-gezähnten oder fast fiederspaltigen, 2--8 cm langen Blättchen. -- Um 1750. B.M. 364; N.K. 14: 12; B.C. III:3481. (X) Nur im Weinbauklima bedingt winterhart. In kalten Wintern auch dort immer wieder zurückfrierend, aber an einjährigen Trieben im gleichen Herbst noch blühend. Schöne Herbstblüher zur Verwendung in der Nähe des Hauses auf der Gartenterrasse oder in Verbindung mit andern tropischen Blattpflanzen. Am besten ist frostfreie Überwinterung und Mitte Mai Pflanzung ins Freie. Bei gute Pflege und Ernährung machen sie in wenigen Monaten lange Schösslinge, die in warmen Sommern fast immer noch zur Blüte kommen. Vermehrung durch Aussaat und ausgereifte, krautige Stecklinge im Sommer."

The variety has been collected at 200 meters altitude in Shantung. An additional vernacular name for it is "mu chin". The corollas are described as having been "bluish" on Chiao 3052 and as "lavender" on K. H. Beach 445.

The Herb. Hort. Bot. Petrop. s.n., originally distributed as this variety, appears to be V. negundo var. heterophylla f. multifida (Carr.) Rehd., C. O. Levine s.n. [Herb. Canton Chr. Coll. 250 & 1585], Fung 21196, J. E. Norton 1558, and W. T. Tsang 28047 are V. negundo var. intermedia (P'ei) Moldenke, C. O. Levine s.n. [Herb. Canton Chr. Coll. 376] is V. negundo L., and

C. O. Levine s.n. [Herb. Canton Chr. Coll. 746] is V. sampsoni Hance. The Zimmermann 442, originally distributed as this variety, seems to be mostly var. cannabifolia (Sieb. & Zucc.) Hand.-Mazz., although it was identified by P'ei as his f. intermedia and at least one specimen of it has been so cited by me. Certainly the collection is not var. heterophylla!

Additional citations: CHINA: Chahar: Kozlov 71 (W-1658549). Hopeh: K. H. Beach 145 (W-2070714), 228 (W-2070785); Chiao 227 [Herb. Univ. Nanking 21384] (W-1554261); Cowdry s.n. [Vicinity of Peking, 1919] (W-1051760); H. J. Sheehan 98 (W-1576691). Shansi: Ling 1467 [Herb. Univ. Nanking 9113] (W-1370452), 1721 [Herb. Univ. Nanking 9366] (W-1370453), s.n. [Herb. Univ. Nanking 9386] (W-1370454). Shantung: Chiao 3052 (W-1576506). Province undetermined: Bunge s.n. [Chin. bor. 1830] (W-2497090).

VITEX NEGUNDO var. HETEROPHYLLA f. ALBA (Carr.) Moldenke

Additional bibliography: Moldenke, Phytologia 15: 310. 1967; Moldenke, Biol. Abstr. 49: 851. 1968.

VITEX NEGUNDO var. HETEROPHYLLA f. MULTIFIDA (Carr.) Rehd.

Additional synonymy: Vitex dissecta Vasey ex Moldenke, Phytologia 17: 19, in syn. 1968.

Additional bibliography: Moldenke, Phytologia 15: 310-311. 1967.

Material of this form has been distributed in herbaria under the name V. incisa Lam.

Additional citations: CULTIVATED: District of Columbia: Vasey s.n. [Greenhouse, 1881] (W-73894). Russia: Herb. Hort. Bot. Petrop. s.n. (W-73895).

VITEX NEGUNDO var. INTERMEDIA (P'ei) Moldenke

Additional bibliography: S. V. Ramaswami, Study Flow. Pl. Bangalore [thesis] 1030-1031 & 1467. 1966; Moldenke, Phytologia 15: 307 & 311. 1967.

Recent collectors have found this plant growing on slopes. Tsang reports it as "fairly common" and "abundant scattered shrubs" in Kwangsi, Norton refers to it as "common on open hill-sides" in Fukien, and Ching found it in "open thickets on stream banks" in Chekiang.

The corollas are described as having been "lavender" on Chiao 2704 & s.n. [Herb. Univ. Nanking 14054] and Koelz 4592, "bluish" on Rock 6981 and Tsiang & P'ei 5725, "bluish-purple" on R. C. Ching 2429, "blue" on J. B. Norton 1558 and Tsang 27733, "pink" on Tsang 27843, and "white" on Tsui 303.

Herbarium material has been identified and distributed under the epithet V. negunda L., in addition to the epithets previously recorded. On the other hand, the C. Wright s.n. [Hong Kong] and the Zimmermann 442 and Barchet 556, cited by P'ei or so identified

by him, seem to me to be better placed as var. cannabifolia (Sieb. & Zucc.) Hand.-Mazz.

Additional citations: INDIA: East Punjab: Koelz 4592 (W--1667949). CHINA: Anhwei: Herb. Univ. Nanking 1726 (W--1345970). Chekiang: Barchet s.n. (W--597586, W--597594); Chiao s.n. [Herb. Univ. Nanking 14054] (W--1426576), s.n. [Herb. Univ. Nanking 14580] (W--1426962); R. C. Ching 2429 (W--1247250); A. N. Steward s.n. [Herb. Univ. Nanking 2387] (W--1345971). Fukien: J. B. Norton 1558 (W--1172734). Hupeh: E. H. Wilson 790 [7/07] (W--777443), 790 [12/07] (W--777443), 2702 [6/07] (W--777470), 2702 [8/07] (W--777470). Kiangsi: Chiao s.n. [Herb. Univ. Nanking 18774] (W--1554014). Kwangsi: Fung 21196 (W--1704611); W. T. Tsang 27733 (W--1757177), 27843 (W--1757268), 28047 (W--1757432). Kwangtung: C. O. Levine s.n. [Herb. Canton Chr. Coll. 894] (W--1091674), s.n. [Herb. Canton Chr. Coll. 1420] (W--877508), s.n. [Herb. Canton Chr. Coll. 1585] (W--877507), s.n. [Herb. Canton Chr. Coll. 3442] (W--1270970); Tsui 303 (W--1754587). Kweichow: Tsiang & P'ei 5725 (W--1575153). Shantung: Chiao 2704 (W--1553816, W--1595051). Szechuan: Farges s.n. (W--2497126). Yunnan: J. F. C. Rock 6981 (W--1212126). Province undetermined: Schoch 427 (W--1174976). CHINESE COASTAL ISLANDS: Honam: C. O. Levine s.n. [Herb. Canton Chr. Coll. 250] (W--778606). THAILAND: Zimmermann 2 (W--595002). INDOCHINA: Tonkin: Pételot 1170 (W--1717012).

VITEX ORINOCENSIS H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 200. 1817.

Additional synonymy: Vitex orinoccensis Humb. & Bonpl. apud Steud., Nom. Bot., ed. 1, 888. 1821. Vitex orineceasis Huber, in herb.

Additional & emended bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 200 (1817) and ed. quart., 2: 247. 1818; Steud., Nom. Bot., ed. 1, 888. 1821; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; Veillon, Revist. Forest. Venez. 5: 59. 1962; Moldenke, Phytologia 15: 312--313. 1967.

It should be noted that the H.B.K. reference dates given above have been authenticated by consultation of the work by Barnhart (1902) on this subject.

VITEX ORINOCENSIS var. MULTIFLORA (Miq.) Huber

Additional synonymy: Vitex orineceasis var. multiflore (Miq) Huber, in herb.

Additional bibliography: Moldenke, Phytologia 15: 313. 1967.

Breteler describes this plant as a tree, 13 m. tall, the trunk 35 cm. in diameter at breast height, branched from low down, the bark shallowly and finely fissured, brownish-gray, the leaflets papery, slightly glossy and medium-green above, paler and dull beneath, the corolla pale-purple (on his no. 3662), the fruit subglobose, glossy, smooth, black at maturity, and growing at 350

meters altitude.

Additional citations: VENEZUELA: Barinas: Breteler 3662 (W--2465602), 3907 (W--2465856).

VITEX OXYCUSPIS J. G. Baker

Additional bibliography: Moldenke, *Phytologia* 15: 314. 1967; Anon., *Biol. Abstr.* 49: 390. 1968.

VITEX OXYCUSPIS var. MOSSAMBICENSIS Moldenke

Additional bibliography: Moldenke, *Phytologia* 15: 314--315. 1967; Anon., *Biol. Abstr.* 49: 390. 1968.

VITEX PARVIFLORA A. L. Juss.

Emended synonymy: Vitex leucoxydon Span. ex Miq., *Fl. Ind. Bat.* 2: 863. 1856 [not V. leucoxydon Blanco, 1895, nor L., 1829, nor L. f., 1781, nor Naves, 1918, nor Roth, 1956, nor Roxb., 1814, nor Schau., 1893, nor Wall., 1847, nor Willd., 1832].

Additional bibliography: Pers., *Sp. Pl.* 3: 360. 1819; Steud., *Nom. Bot.*, ed. 1, 888. 1821; Vidal, *Phan. Cuming. Philip.* 134. 1885; Moldenke, *Phytologia* 15: 316--317 & 320 (1967) and 16: 500 & 501. 1968.

It should be noted that the V. leucoxydon of Linnaeus the younger is a valid species, with the homonyms ascribed to Linnaeus the elder, to Wallich, and to Willdenow as synonyms, that of Blanco and of Naves is V. negundo L., that ascribed to Schauer is V. glabrata R. Br., and that accredited to Roth and to Roxburgh is V. glabrata var. bombacifolia (Wall.) Moldenke.

The corollas are described as having been "light-blue" on Seibert 1535. This collector describes the plant as a tree, 6--8 meters tall, with blue-black fruit in August. He states that it is cultivated along the riverbank at Farm No. 5, Almirante, in the Changuinola District, by the United Fruit Company, in Panama, where it was originally introduced because "the wood is good for railroad ties".

Vidal (1885) cites Cuming 1144, 1365, & 1830 for this species. Herbarium material has been misidentified and distributed as V. floridula Duchass. & Walp.

Additional citations: CULTIVATED: Hawaiian Islands: Degener & Degener 30092 (Ms--49581). Panama: Seibert 1535 (E--1570765).

VITEX PEDUNCULARIS Wall.

Additional synonymy: Vitex peduncularis "Wall. ex Schau." apud Deb, *Bull. Bot. Surv. India* 3: 315. 1961.

Additional & emended bibliography: Watt, *Dict. Econ. Prod. India* 6 (4): 250. 1893; Gamble, *Man. Ind. Timb.*, ed. 2, 541. 1902; Prain, *Bengal Fl.*, ed. 1, 2: 832 & 833. 1903; Gamble, *Fl. Presid. Madras* 2: 1102 & 1103. 1924; Deb, *Bull. Bot. Surv. India* 3: 315. 1961; Prain, *Bengal Fl.*, ed. 2, 2: 621, 622, & 1012. 1963; R. C. Ghosh in Lahiri, *West Beng. Forests* 197. 1964; Sen & Naskar, *Bull. Bot. Surv. India* 7: 60. 1965; Jain & De, *Bull. Bot. Surv. India*

8: 247. 1966; Rao & Rabha, Bull. Bot. Surv. India 8: 301. 1966; Moldenke, Phytologia 15: 319-320. 1967.

Prain (1963) describes this species as a tree, 20-40 feet tall, and records it from Bihar, Chota Nagpur, and Orissa. Deb (1961) says "leaflets densely covered with minute yellow glands beneath, panicles axillary", and cites Meebold 5739. Rao & Rabha (1966) record the species from Assam, while Jain & De (1966) tell us that in West Bengal it is known as "bhadu", the ripe fruits are eaten, the wood is used to make agricultural implements, and the leaves are eaten as a vegetable in the treatment of ophthalmia. Ghosh (1964) encountered the species at 150 meters altitude in the foothills of West Bengal. It has been found in flower and fruit in July.

An additional vernacular name recorded for V. peduncularis is "kyelyo", while the name, "tin nok", previously recorded for it, is said to be applied also to V. limonifolia Wall in Thailand.

Additional citations: INDIA: West Bengal: C. B. Clarke 11733c (W-802339). BURMA: Upper Burma: Annoon s.n. [Herb. Burma Forest School 93] (W-1716643); Prazer 7 (W-712906), 73 (W-712957). THAILAND: Native collector A.33 [Herb. Roy. Forest Dept. 5883] (W-2064806). INDOCHINA: Cochinchina: Thorel 1006 (W-2497093).

VITEX PEDUNCULARIS var. ROXBURGHIANA C. B. Clarke

Additional bibliography: Roxb., Fl. Ind., ed. 2 [Carey], 3: 72. 1832; Watt, Econ. Prod. India 7: 254. 1883; Watt, Dict. Econ. Prod. India 6 (4): 250. 1893; Gamble, Man. Ind. Timb., ed. 2, 541. 1902; Prain, Bengal Fl., ed. 1, 2: 832 & 833 (1903) and ed. 2, 2: 621 & 622. 1963; Moldenke, Phytologia 15: 320. 1967.

Prain (1963) records this variety from Bihar and from Chota Nagpur, and adds the vernacular name "marak!". In his 1903 work he cites the Watt reference given above as "E. D. 5: 174".

VITEX PHAEOTRICHA Mildbr.

Additional bibliography: Moldenke, Phytologia 15: 314 & 321-322. 1967.

VITEX PIERREI Craib

Additional bibliography: Moldenke, Phytologia 15: 323. 1967.

Additional citations: THAILAND: Mrs. D. J. Collins 706 (W-1700656).

VITEX PINNATA L., Sp. Pl., ed. 1, 638. 1753 [not V. pinnata Lour., 1847, nor "Lour. ex Schau.", 1963].

Additional & emended synonymy: Vitex negundo Noronha, Verh. Batav. Gen. 5, ed. 1, art. 4: 86. 1790 [not V. negundo Curtis, 1832, nor L., 1753, nor L. f., 1966, nor Lour., 1934, nor Royle, 1919, nor Willd., 1918]. Vitex arborea Roxb., Hort. Beng. 46, hyponym. 1811; Fl. Ind., ed. 2 [Carey], 3: 73. 1832 [not V. arborea Bréon, 1955, nor Brown, 1806, nor Desf., 1847, nor Fischer, 1829]. Pistacia vitex L. ex Watt, Dict. Econ. Prod. India 6 (4):

250, in syn. 1893. Vitex pubescens var. genuina Hochr., Candollea 5: 191. 1934.

Additional & emended bibliography: J. F. Gmel. in L., Syst. Nat., ed. 13, pr. 1, 2: 963 (1789) and pr. 2, 2: 963. 1796; Pers., Sp. Pl. 3: 360 & 361. 1819; Steud., Nom. Bot., ed. 1, 888. 1821; Roxb., Fl. Ind., ed. 2 [Carey], 3: 73--74. 1832; Gamble, Man. Ind. Timb., ed. 1, 297--298. 1881; Watt, Econ. Prod. India 7: 255. 1883; Watt, Dict. Econ. Prod. India 6 (4): 250. 1893; Gamble, Man. Ind. Timb., ed. 2, 541. 1902; Prain, Beng. Pl., ed. 1, 2: 832 & 833. 1903; Gamble, Fl. Presid. Madras 2: 1101--1103. 1924; C. Coster, Ann. Jard. Bot. Buitenz. 38: pl. 6, fig. 2. 1928; Hochr., Candollea 5: 191--192. 1934; M. R. Henderson, Common Malay. Wildfls. 39. 1961; Prain, Beng. Pl., ed. 2, 2: 621, 622, & 1012. 1963; Santapau & Wagh, Bull. Bot. Surv. India 5: 109. 1963; Douk, Trav. Lab. Mat. Méd. Pharm. Gal. Paris 50: 1--264. 1965; Sen & Naskar, Bull. Bot. Surv. India 7: 60. 1965; M. S. Mani, Bull. Bot. Surv. India 7: 114. 1965; Anon., Ind. Bibliog. Bot. Trop. 3 (2): 15. 1966; Moldenke, Phytologia 15: 323--325 (1967) and 16: 495. 1968; Moldenke, Biol. Abstr. 49: 851. 1968.

Additional illustrations: C. Coster, Ann. Jard. Bot. Buitenz. 38: pl. 6, fig. 2. 1928.

It should be noted here that the V. negundo of Linnaeus the elder is a valid species, with the homonyms accredited to Linnaeus the younger, to Royle, and to Willdenow as synonyms, while the V. negundo ascribed to Curtis belongs in the synonymy of V. negundo var. heterophylla (Franch.) Rehd. and that ascribed to Loureiro is V. quinata (Lour.) F. N. Will. The V. pubescens ascribed to Heyne is a synonym of V. altissima L. f. The V. arborea accredited to Bréon is a synonym of V. beraviensis var. acuminata Moldenke, that accredited to Brown is V. heptaphylla A. L. Juss., while that ascribed to Desfontaines and to Fischer is V. negundo var. albiflora Moldenke.

Santapau & Wagh (1963) feel that the name, V. pinnata Lour., should always be written "V. pinnata Lour. ex Schau.", but my contention has always been that such a double citation is desirably ONLY in a formal synonymy where complete bibliographic references are given. It is too cumbersome to give such a double credit citation on identification labels or in the text of a paper where it would be of little, if any, added value.

Banternasuk describes V. pinnata as a "medium tree common in dry deciduous forests" in Thailand. The corollas are described as having been "purplish" on his no. 13. Mani (1965) reports a plant gall found on this species, made by Eriophyes cryptotrichus Nalepa. It is an epiphyllous hemispheric verrucose pouch-gall 0.5--5 mm. in diameter, and is his gall no. 29.

The bibliographic reference "Gamble 772" is sometimes given in literature for this species, but has not as yet been located by me.

The Burma Forest School 22, distributed as V. pinnata, is actually V. limonifolia Wall.

Additional citations: INDIA: West Bengal: Helfer 132 (W--1669076). BURMA: Tenasserim: Gallatly 1012 (W--263078). THAILAND: Banternasuk 13 [Herb. Roy. Forest Dept. 2010] (W--2064783); Hansen & Smitinand 12186 (Rf).

VITEX PINNATA var. ALATA Moldenke

Additional bibliography: Moldenke, Phytologia 15: 324 & 325. 1967; Moldenke, Biol. Abstr. 49: 851. 1968.

Additional citations: INDIA: Khasi States: Hooker & Thomson s. n. [Mont. Khasia] (W--2497073).

VITEX PINNATA f. ANOMALA Moldenke

Bibliography: Moldenke, Phytologia 4: 184. 1953; Moldenke, Biol. Abstr. 27: 2026. 1953; Moldenke, Phytologia 6: 79--80. 1957; Moldenke, Résumé 198 & 478. 1959.

VITEX PINNATA var. PANTJARENSIS (Hochr.) Moldenke, comb. nov.

Synonymy: Vitex pubescens var. pantjarensis Hochr., Candollea 5: 191--192. 1934.

Hochreutiner's original description of this taxon is as follows: "Flores ochroleuci, calyx profundius dentatus, inflorescentia majus elongata thyrsoides, folia 5-foliolata, sed ut in typo pubescentia et nervata. Java, Goenoeng Pantjar, à l'E. de Buitenzorg au pied de la montagne, formant de grands arbres especés dans la brousse et haute de \pm 8 m. alt. ca. 350 m., 17 septembre 1904, fleurs jaunâtres (n. 1846). Comme on le voit, c'est une variété très distincte du type. D'aucuns y verront une espèce spéciale. Toutefois, comme les spécimens hindous du V. arborea Roxb. -- considérés comme synonymes -- ont le temps à autre 4 et peut-être 5 folioles, on peut considérer ce caractère comme variétal."

VITEX POBEGUINI Aubrév.

This taxon has recently been shown to be conspecific with V. madiensis Oliv. and should therefore be deleted from my list of valid and accepted taxa.

VITEX POGGEI Gürke

Additional bibliography: Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 457 (1906) and pr. 2, 457. 1941; Moldenke, Phytologia 6: 80. 1957; Moldenke, Résumé 443 & 478. 1959; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 457. 1959.

VITEX POLYGAMA Cham.

Additional bibliography: Bocq., Adansonia 3: [Rev. Verbenac.] 253. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 447 (1893) and 2: 1214. 1895; Sampaio, Bol. Mus. Nac. Rio Jan. 13: 258. 1937; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 447 (1946) and 2: 1214. 1946; Le Cointe, Amaz. Bras. III Arv. & Plant. Uteis, ed. 2, 292. 1947; Angely, Fl. Paran. 7: 13. 1957; Moldenke, Phytologia 6: 80--89. 1957; Jacks. in Hook. f. & Jacks.,

Ind. Kew., pr. 3, 1: 447 (1960) and 2: 1214. 1960; Moldenke, Phytologia 8: 75. 1961; Moldenke, Résumé Suppl. 12: 5. 1965.

Recent collectors refer to this plant as a "touceira com diversos caules, 2 m.", with red anthers and white pollen, growing in sandy soil, flowering in August, and known as "graúna". The corollas are described as "violet" on H. F. Martins 242 and as "violacea com tubo floral mais claro" on Mattos & Mattos 8382.

A cotype collection, in fruit, Sellow s.n., deposited in the herbarium of the Botanisches Museum at Berlin, was photographed there by Macbride as his type photograph number 17565 (in part), but is now destroyed.

According to Sampaio (1937), the name "maria preta", recorded for Vitex polygama, is also applied to Blanchetia heterotricha P. DC., Cordia curassavica Roem. & Schult., Melanoxylum brauna Schott, and Zollernia ilicifolia Vog.

The Schwacke s.n. [Maná], distributed as V. polygama, is actually var. hirsuta Schau.

Additional citations: BRAZIL: Guanabara: Alston & Lutz 142 (Ja--114096, Ja); Hans s.n. [30-10-1946] (Ja--43757, Ja); B. Lutz 919 (Ja--29489); H. F. Martins 242 [Herb. Cent. Pesq. Florest. 1048] (Ac); Rosa 59 (Ja--52342, Ja, Ja); N. Santos 5268 [236-2] (Ac, Ja), 5300 [237-2] (Ac, Ja), 5373 [244-3] (Ja, Ja). Minas Gerais: A. Castellanos 25421 [Herb. Cent. Pesq. Florest. 4229] (Ac); Heringer 7257 (B). Rio de Janeiro: Glaziou 3860 (Ja--5959). São Paulo: Mattos & Mattos 8382 (W--2445191). State undetermined: Heringer 3594 (B); Sellow s.n. [Brasilia; fructifera; Macbride photos 17565, in part] (W--photo of cotype).

VITEX POLYGAMA var. BAKERI Moldenke

Additional & emended bibliography: Moldenke, Phytologia 6: 83 & 86--87 (1957) and 8: 75. 1961.

VITEX POLYGAMA var. DUSENII Moldenke

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1214 (1895) and pr. 2, 2: 1214. 1946; Angely, Fl. Paran. 7: 13. 1957; Moldenke, Phytologia 6: 83 & 87--88. 1957; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1214. 1960; Moldenke, Phytologia 8: 75--76. 1961; Moldenke, Résumé Suppl. 12: 5. 1965.

A specimen of G. Gardner 582, deposited in the herbarium of the Conservatoire et Jardin Botaniques at Geneva, was photographed there by Macbride as his type photograph number 24703, but is not a type collection of any sort.

The original description of V. laciniosa by Turczaninow (1863) is as follows: "Vitex (pyrostoma) lacinosā. V. tota pilis rufescentibus tecta, ramis compresso-tetragonis; foliis longe petiolatis 5foliolatis, foliolis obovato-oblongis, basi longe attenuatis petiolulatis, apice obtusis mucronulatis vel acutiusculis integer-

rimis aut subrepandis inconspicue denticulatis, supra pilis adpressis scabris, subtus praesertim ad nervationes densius pilosis cinereis; cymis axillaribus petiolo duplo brevioribus bifidis, cum flore solitario in dichotomia; bracteis linearibus flores excedentibus; calycis dentibus tubum aequantibus, tubo corollae parum brevioribus. Bahia, Kegel No 12319. V. polygama Cham. et Schl. huic valde similis, differt tomento, praesertim in tergo foliorum multo densiore, atque corollis calycem duplo superantibus."

Additional citations: BRAZIL: Guanabara: A. Castellanos 24027 [Herb. Cent. Pesq. Florest. 2864] (Ac); H. F. Martins 337 [Herb. Cent. Pesq. Florest. 2870] (Z). Rio de Janeiro: G. Gardner 582 [Macbride photos 24703] (N--photo, W--photo).

VITEX POLYGAMA var. GLAZIOVII Moldenke

Additional bibliography: Moldenke, *Phytologia* 6: 82, 83, & 88. 1957; Moldenke, *Résumé* 111 & 478. 1959.

VITEX POLYGAMA var. HIRSUTA Schau.

Additional & emended bibliography: Moldenke, *Phytologia* 6: 83 & 87--89 (1957) and 8: 76. 1961.

A cotype specimen, Sellow s.n., deposited in the herbarium of the Botanisches Museum at Berlin, was photographed there by Macbride as his type photograph number 17565 (in part), but is now destroyed.

The corolla is described as "blue" on Schwacke s.n., and the plant has been found in anthesis in December. Material has been misidentified and distributed in herbaria as typical V. polygama Cham.

Additional citations: BRAZIL: Espirito Santo: Sellow s.n. [Macbride photos 17565, in part] (W--photo of cotype). Rio de Janeiro: Schwacke s.n. [Maná] (Ja--5968).

VITEX POLYGAMA var. WARMINGII Moldenke

Additional bibliography: Moldenke, *Phytologia* 6: 83 & 89. 1957; Moldenke, *Résumé* 112, 379, & 478. 1959.

VITEX POQARA Corbishley

Additional bibliography: A. W. Hill, *Ind. Kew. Suppl.* 6: 219. 1926; J. Hutchinson, *Botanist in South. Afr.* 294. 1946; Moldenke, *Phytologia* 8: 76. 1961; Watt & Breyer-Brandwijk, *Medic. & Poison. Pl. S. Afr.*, ed. 2, 1055 & 1454. 1962; C. A. Sm., *Common Names S. Afr. Pl.* 243, 374, 438, 439, 498, & 601. 1966.

Smith (1966) records the vernacular names "hardekool", "poeraboom", "poerasboom", "stinkbessie", "stinkbos", "stinkbossie", and "weeluisbessie" for this species — the first of which is also applied to Combretum. He reports that the ripe drupes are black and have the offensive smell of bedbugs or "weeluis", but this does not deter the natives and Europeans from eating the fruit. Hutchinson (1946) cites his no. 1877.

VITEX PSEUDOCRYSOCARPA Pieper

Additional synonymy: Vitex pseudo-chrysocarpa Pieper ex Worsdell, Ind. Lond. Suppl. 2: 500. 1941.

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 8: 249. 1933; Moldenke, Phytologia 6: 90--91. 1957; Moldenke, Résumé 133, 138, 143, 382, & 478. 1959; Huber in Hutchinson & Dalz., Fl. W. Trop. Afr., ed. 2, 2: 448. 1963; Moldenke, Phytologia 15: 95. 1967; Moldenke, Résumé Suppl. 15: 25. 1967.

Huber (1963) reduces this species to V. chrysocarpa Planch., but fails to cite the type collection, which is probably Dalziel 771 [not "Dabjiel" as stated in error previously], and, being a collection by one of the co-authors of the work in which Huber was writing, should have been available to him for examination. He does, however, cite Barter 1214, a collection also cited by Pieper, so therefore doubtless bases his opinion on this specimen.

VITEX PSEUDOCUSPIDATA Mildbr.

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 7: 252 (1929) and 8: 249. 1933; Moldenke, Phytologia 6: 91. 1957; Moldenke, Résumé 139 & 478. 1959.

VITEX PSEUDOLEA Rusby

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 8: 249. 1933; Moldenke, Phytologia 6: 91--93. 1957; Moldenke, Résumé 85, 115, & 478. 1959; Soukup, Biota 5: 137. 1964; Moldenke, Résumé Suppl. 15: 5. 1967.

Ferreyra describes this plant as a tree, 10--12 m. tall, with "violet" corollas, known locally as "palo de perro", the wood being used for timber.

Additional citations: PERU: San Martín: Ferreyra 4829 (W--1998617). BOLIVIA: Cochabamba: R. F. Steinbach 464 (S). El Beni: O. E. White 767 (G--isotype).

VITEX PUBERULA J. G. Baker

Additional bibliography: K. Schum. in Just, Bot. Jahresber. 28 (1): 497 & 498. 1902; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 194. 1904; Moldenke, Phytologia 6: 93. 1957; Moldenke, Résumé 148, 383, & 478. 1959.

VITEX PULCHRA Moldenke

Bibliography: Moldenke, Phytologia 3: 445--446. 1951; Moldenke in Humbert, Fl. Madag. 174: 76, 132--133, 135, & 273, fig. 21, 1 & 2. 1956; Moldenke, Phytologia 6: 93--94. 1957; Moldenke, Résumé 157 & 478. 1959; G. Taylor, Ind. Kew. Suppl. 12: 151. 1959.

Illustrations: Moldenke in Humbert, Fl. Madag. 174: 135, fig. 21, 1 & 2. 1956.

VITEX PYRAMIDATA B. L. Robinson

Additional synonymy: Virex pyramidata Robins. ex Moldenke, Résumé Suppl. 6: 11, in syn. 1963.

Additional & emended bibliography: Durand & Jacks., *Ind. Kew. Suppl.* 1, pr. 1, 457. 1906; P. C. Standl., *Contrib. U. S. Nat. Herb.* 23: 1235 & 1236. 1924; H. B. Davis, *Life & Works Pringle* 115, 284, 668, & 669. 1936; Durand & Jacks., *Ind. Kew. Suppl.* 1, pr. 2, 457 (1941) and pr. 3, 457. 1959; Moldenke, *Phytologia* 8: 76. 1961; Langman, *Select. Guide Lit. Flow. Pl. Mex.* 596 & 1010. 1964; Moldenke in Shreve & Wiggins, *Veg. & Fl. Son. Des.* 2: 1261--1262. 1964; Moldenke, *Phytologia* 15: 265. 1967.

Recent collectors describe this plant as a tree, to 5 m. tall, with fragrant flowers, fruiting in November and December, known locally as "capulin" or "jupari", and ascending from 100 to 1400 meters altitude. It has been found growing in matorral with *Byrsonima* sp. or with *B. crassifolia* and *Curatella* sp., in disturbed matorral, or in open woods and pastures, "in rocky soil in association with *Bursera*, *Erythrina*, etc., in regular abundance" in Morelos. Feddema reports it "common" on savannas with *Brysonima* and *Curatella*, as well as in cleared areas, in Nayarit. In the same state it is said by McVaugh to be "occasional" with *Erosimum*, *Platymiscium*, and *Sapium*, or to be "abundant" in rocky disturbed woodlands.

The corolla is described as "blue" on *J. Rzedowski* 15267, "lavender" on *R. Q. Abbott* 141, and "bright-purple" on *R. McVaugh* 15223. In Shreve & Wiggins (1964) the distribution of the species is given as "On rocky hillsides, prairies, and basaltic mesas, in arroyos, and at edge of craters, Lower Sonoran to Tropical Zones, Sonora to Yucatán. Employed by the natives for food, fuel, and construction. When burned, the ash is blue."

The *G. F. Gaumer* 607, distributed as *V. pyramidata*, is actually the type collection of *V. gaumeri* Greenm., *Arguelles* s.n. [San Bernardo, 12 Agosto 1958] is *V. mollis* H.B.K., and *Janzen* s.n. [29 May 1964] is not verbenaceous.

Additional citations: MEXICO: Guerrero: *R. Q. Abbott* 141 (Ip); *Hinton* 10002 (Rf), 10005 (Rf), 11244 (Rf); *Paray* 1915 (Ip). Jalisco: *Herb. Univ. Kans. Mex. Exped. W.57* (W-2088629); *A. R. Moldenke* 1823 (Rf); *Pringle* 1429 (Ms-30949--isotype); *J. Rzedowski* 15267 (Du-513631, Ip). México: *Hinton* 4086 (Rf); *R. V. Moran* 10159 (Du-498154). Morelos: *Cox & Guzmán* MCC.631 (Ip). Nayarit: *Feddema* 877 (Mi), 1343 (Mi), 2632 (Mi); *R. McVaugh* 15223 (Mi), 19089 (Mi); *J. Rzedowski* 14396 (Ip), 17864 (Ip, Mi). Sinaloa: *J. Gonzalez Ortega* 793 (Ip). Sonora: *Arguelles* s.n. [San Bernardo, 18 Octubre 1958] (Rf).

VITEX QUINATA (Lour.) F. N. Will.

Additional & emended synonymy: *Vitex hetrophylla* Roxb. apud Kawakami, *List Pl. Formos.* 85, sphalm. 1910. *Vitex quinata* (Lam.) F. N. Will. apud S. Sasaki, *List Pl. Formos.* 353, sphalm. 1928. *Vitex negundo* Lour. ex Crevost & Pételot, *Bull. Econom. Indo-chine* 37: 1294, in syn. 1934 [not *V. negundo* Curtis, 1832,

nor L., 1753, nor L. f., 1966, nor Noronha, 1790, nor Royle, 1919, nor Willd., 1918]. Vitex quinata Dop ex Fletcher, Kew Bull. Misc. Inf. 1938: 434, in syn. 1938. Connutia quinata Lour. apud Li, Wood. Fl. Taiwan 834, in syn. 1963. Vitex quinata Lour. ex Moldenke, Résumé Suppl. 15: 25, in syn. 1967. Vitex quinaria (Lour.) F. N. Will., in herb.

Additional & emended bibliography: Steud., Nom. Bot., ed. 1, 228. 1821; Roxb., Fl. Ind., ed. 2 [Carey], 3: 75. 1832; Hook. & Arn., Bot. Beech. Voy. 206, pl. 48. 1836; Bocq., Adansonia 3: [Rev. Verbenac.] 253. 1863; Gamble, Man. Ind. Timb., ed. 1, 296. 1881; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 619 (1893) and 2: 1213 & 1214. 1895; Gamble, Man. Ind. Timb., ed. 2, 539. 1902; Prain, Beng. Pl., ed. 1, 2: 832 & 833. 1903; Prain, Ind. Kew. Suppl. 3: 189. 1908; Kawakami, List Pl. Formos. 85. 1910; Dunn & Tutcher, Kew Bull. Misc. Inf. Addit. Ser. 10: 204. 1912; A. W. Hill, Ind. Kew. Suppl. 6: 219. 1926; S. Sasaki, List Pl. Formos. 353. 1928; Stapf, Ind. Lond. 6: 478 & 479. 1931; P'ei, Sinensia 2: 70 & 73. 1932; E. D. Merr., Comm. Lour. 334. 1935; Backer, Tectona 29: 686. 1936; Kanehira, Form. Trees, rev. ed., 652, fig. 608. 1936; Fletcher, Kew Bull. Misc. Inf. 1938: 432 & 434. 1938; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 619 (1946) and 2: 1213 & 1214. 1946; Neal, In Gard. Hawaii, ed. 1, 643. 1948; Anon., Kew Bull. Gen. Index 1929-1956, 84 & 293. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 619 (1960) and 2: 1213 & 1214. 1960; Moldenke, Phytologia 8: 76. 1961; Liu, Illustr. Nat. & Introd. Lign. Pl. Taiwan 2: 1230, pl. 1038. 1962; Li, Wood. Fl. Taiwan 16, 832, 834, & 973. 1963; Prain, Beng. Pl., ed. 2, 2: 621, 622, & 1012. 1963; Srinivasan & Agarwal, Bull. Bot. Surv. India 5: 68. 1963; Panigrahi, Chowdhury, Raju, & Deka, Bull. Bot. Surv. India 6: 255. 1964; Smitinand, Govt. Sarawak Sympos. Ecol. Res. Humid Trop. Veg. 41 & 43. 1965; Mukerjee, Bull. Bot. Surv. India 7: 135. 1965; Backer & Bakh., Fl. Java 2: 606. 1965; Sen & Naskar, Bull. Bot. Surv. India 7: 60. 1965; Hatusima, Mem. Fac. Agr. Kagoshima Univ. 5 (3): 16 & 47. 1966; Moldenke, Résumé Suppl. 15: 8, 9, & 25. 1967; Moldenke, Phytologia 15: 244 & 307. 1978.

Additional illustrations: Hook. & Arn., Bot. Beech. Voy. pl. 48. 1841; Kanehira, Form. Trees, rev. ed., fig. 608. 1936; Liu, Illustr. Nat. & Introd. Lign. Pl. Taiwan 2: pl. 1038. 1962.

It should be noted here that the V. negundo of Linnaeus the elder is a valid species, with the homonyms ascribed to Linnaeus the younger, to Royle, and to Willdenow as synonyms, while that accredited to Curtis is V. negundo var. heterophylla (Franch.) Rehd. and that ascribed to Noronha is V. pinnata L.

The Hooker & Arnott reference given in the bibliography above is sometime erroneously cited as "1841", but actually pages 193 to 288 and plates 40 to 59 in this work were issued in 1836.

Recent collectors describe this plant as a tree, 12-21 m. tall, the trunk 15 cm. to 2 m. in diameter, the bark grayish-brown, the immature fruit green or yellow, and the mature fruit

purplish-black to black, growing in ravines, the edges of cleared ravines, mixed forests, open moist wood-margins, and dry ground beside forests.

The corollas are described as having been "white" on Lau 153, Lei 714, and W. T. Tsang 178, "white-purplish" on Wang 33752, "blue" on Lau 16, "pink" on Taam 1532, and "yellow" on W. T. Tsang 719.

Backer & Bakhuizen van den Brink (1965) describe the species as follows: "Leaflets 3-5, pellucid dotted (by the presence of cystoliths. In dried materials the upper surface of the leaves often shows a whether or not [=more or less?] circumvallate shallow depression near each cystolith.), petioluled, oval-elliptic-obovate-oblong, mostly acuminate, herbaceous or thinly coriaceous, pubescent on the nerves when young; median one 5-13 cm by 2 1/2 - 6 cm, on a petiolule 1 1/2 - 3 cm long, the other ones smaller, on shorter petiolules; petiole 2-10 cm. Panicles terminal and often also in the upper leaf-axils, 5-25 cm long; cymes 1/2 - 3 cm (inclusive of 2-10 mm petiole); calyx 3-4 mm, with broad teeth; corolla sordidly violet; tube 5-7 mm, inside glabrous or (from the insertion of the stamens up to the base of the lower lip) with few to many hairs; filaments glabrous or basally sparingly hairy, shortly exerted; drupe subglobose, 3/4 - 1 cm diam. Tree.....not too dry forest." They certainly meant to say "peduncle" rather than "petiole" in their description of the length of the cymes. They include V. sumatrana Miq. and V. velutina "K. & V." in the synonymy of V. quinata.

Hatusima (1966) gives the distribution of the species as "India to S. China, Formosa, Malaysia". Srinivasan & Agarwal (1963) record it from West Bengal, Assam, and East Bengal. Panigrahi and his associates (1964) refer to it as "abundant" in Orissa, but Hatusima (1966) tells us that it is "rare" on Batan Island. Mukerjee (1965) states that this tree "helps with sufficient moisture to convert a deciduous forest to evergreen".

Vernacular names recorded for it include "five-leaved chaste-tree", "hu'kham", "kaazab", "ka wariba-nimzinboku", "kuburasi", "nãa-á", "õ-ninjin-baku", "oo-nimzinboku", "o-tin", "patt'ttu", "pò-kiu", "poorasu", "pw-kiang", and "soa-po-kiwn".

Li (1963) cites Faurie 1021, A. Henry 1182, 1182 A/B, & 1182 C, Kawai s.n., Kawakami & Mori 7, Keng 1369, Makino s.n., Matuda 359 & s.n., Oldham 384, Owatari s.n., Suzuki 20503, and E. H. Wilson 10019 & 11127 from Formosa.

Material has been misidentified and distributed in herbaria as Ardisia sp. On the other hand, the R. C. Ching 5552, O. Degener 14481, Greenwood 344a, A. Henry 1182 & 1182c, Keng K.1369, Liang 62780, Peng, Tak, & Kin s.n. [Herb. Canton Chr. Coll. 12613], Pételot 963, A. C. Smith 4307 & 6295, and F. K. Ward 37559, distributed as typical V. quinata, are actually var. puberula (H. J. Lam) Moldenke, while E. H. Wilson 11127 is the type collection of var. serrata Moldenke, Herb. Canton Chr. Coll.

12882 and E. H. Wilson 408 are V. canescens Kurz, C. Wright s.n. [Hong Kong] is V. negundo var. cannabifolia (Sieb. & Zucc.) Hand.-Mazz., and Clemens & Clemens 3394 is V. tripinnata (Lour.) Merr.

Additional citations: CHINA: Chekiang: R. C. Ching 1987 (W--1346846). Kwangsi: R. C. Ching 7309 (W--1248677). Kwangtung: C. O. Levine s.n. [Herb. Canton Chr. Coll. 10] (W--778511), s.n. [Herb. Canton Chr. Coll. 999] (W--779162), s.n. [Herb. Canton Chr. Coll. 1206] (W--1173131), s.n. [Herb. Canton Chr. Coll. 1807] (W--1428694), s.n. [Herb. Canton Chr. Coll. 1876] (W--1347890); Tsiang 1066 (W--1513168); Ying 770 (W--1513078). Yunnan: A. Henry 12638 (W--459211). HONGKONG: W. Y. Chun 5177 (Ws); Taam 1532 (W--2063819), 1846 (W--2072690). CHINESE COASTAL ISLANDS: Hainan: Chun & Tso 43954 (Bi), 44673 (W--1675422); Fung 20420 (Mi); F. C. How 70570 (Bi), 70858 (Bi); How & Chun 70248 (W--1669424); Lau 16 (W--1629005), 153 (W--1629221); Lei 66 (W--1753851), 714 (W--1654279); Liang 62069 (W--1670785); F. A. McClure 786 [Herb. Lingnan Univ. 18320] (W--1666492); W. T. Tsang 178 [Herb. Lingnan Univ. 15677] (W--1250000), 223 [Herb. Lingnan Univ. 15722] (W--1249809), 719 [Herb. Lingnan Univ. 17468] (W--1672609), 868 [Herb. Lingnan Univ. 16367] (W--1249497), 944 [Herb. Lingnan Univ. 16443] (W--1249327); Wang 33752 (W--1670257), 34267 (W--1670370). Honam: Herb. Canton Chr. Coll. 166 (W--778564). WESTERN PACIFIC ISLANDS: Mindanao: Wenzel 2523 (Mi), 2912 (Bi).

VITEX QUINATA var. PUBERULA (H. J. Lam) Moldenke

Additional synonymy: Vitex mindanaensis Merr. ex Moldenke, Résumé Suppl. 4: 21, in syn. 1962.

Additional bibliography: Thiselt.-Dyer, Ind. Kew. Suppl. 2: 194. 1904; Maun, Philip. Journ. Forest. 16: 108. 1960; Moldenke, Phytologia 8: 77--78 (1961) and 15: 244 & 307. 1967.

Merrill based his V. mindanaensis on an unnumbered collection made by B. Rafael and S. S. Ponce in Butuan Subprovince, Mindanao, Philippine Islands, in September or October, 1913 [Herb. Philip. Forest Bur. 20746], deposited in the United States National Herbarium at Washington.

Elmer describes the variety as a stocky tree, 25 feet tall, the trunk 12 inches thick, the wood moderately soft, whitish, soon discoloring to a dirty-white, odorless and tasteless, the bark thick, grayish-white, finely checked, the branches numerous above the middle, forming a dense elongated crown, the twigs ascending, greenish-brown, with elongated lighter-brown lenticels, the petioles green and ascending, the leaflets horizontally recurved, strongly conduplicate on the upper subcluid and darker-green surface, thinly coriaceous, the inflorescence erect, greenish, slightly fragrant, the corolla creamy, the upper segment purplish-streaked, the filaments whitish, and the anthers purplish-brown. Keng describes the bark as pale-gray and furrowed.

The variety has been found growing on fertile soil of open grasslands at altitudes of 15 to 1080 meters. Additional vernacular names for it are "shek wong king", "tai wong muk", and "topas".

The corollas are described as "violet" on F. K. Ward 37559. Material has been misidentified and distributed in herbaria under the names V. glabrata R. Br., V. heterophyllum Roxb., V. negundo L., V. quinata (Lour.) F. N. Will., V. pentaphylla Merr., Teijsmanniodendron coriaceum (C. B. Clarke) Kosterm., and Araliaceae.

Additional citations: CHINA: Kwangsi: R. C. Ching 5552 (W-1248671). Kwangtung: Peng, Tak, & Kin s.n. [Herb. Canton Chr. Coll. 12613] (W-1248228). Yunnan: Feng 13396 (A). CHINESE COASTAL ISLANDS: Hainan: Liang 62780, in part (W-1670920). THAILAND: Smitinand 4859 (Fg); F. K. Ward 37559 (S). INDOCHINA: Tonkin: Pételot 963 (W-1759227). MALAYA: Perak: Corner 31625 (N). WESTERN PACIFIC ISLANDS: FORMOSA: A. Henry 1182 (W-455592), 1182c (W-455593); Keng K.1369 (W-2035969, W-2035970). PHILIPPINE ISLANDS: Mindanao: Elmer 11602 (Bi, N); Rafael & Ponce s.n. [Herb. Philip. Forest Bur. 20746] (W-900566). INDONESIA: GREAT-ER SUNDA ISLANDS: Celebes: Laleno 49 [Boschproefst. B. B. 19444] (Bi); Waturandang 619 [Boschproefst. Cel/V.385] (Bi). Sarawak: M. Jacobs 5144 (W-2377357). Sumatra: Yates 1609 (Mi). MELANESIA: YASAWA FIJI ISLANDS: Viti Levu: O. Degener 11481 (Bi); J. W. Gillespie 2953 (Bi, Bi), 4164.1 (Bi, Bi), 4691.8 (Bi); Greenwood 344a (Bi); A. C. Smith 4307 (Bi), 6295 (Bi).

VITEX QUINATA var. SERRATA Moldenke, var. nov.

Haec varietas a forma typica speciei foliolis grosse serratis recedit.

This variety differs from the typical form of the species in having its leaflet-blades coarsely serrate along the margins above the middle.

The type of the variety was collected by Ernest Henry Wilson (no. 11127) in forests along the upper Pinan River, province of Pinan, Formosa, on November 17, 1918, and is deposited in the United States National Herbarium at Washington. The collector describes the plant as a tree, to 60 feet tall, with a spread of 15 feet. The type is in full fruit, so the serrate character of the leaflets cannot be ascribed to the specimen being from a watersprout, as might otherwise be said. It was originally distributed as V. heterophylla Roxb. and annotated as V. quinata (Lour.) F. N. Will. by Hui-lin Li in 1951.

Citations: WESTERN PACIFIC ISLANDS: FORMOSA: E. H. Wilson 11127 (W-1052400--type).

VITEX RADULA Mildbr.

Synonymy: Vitex robynsi DeWild., Plant. Bequaert. 5: 13--14. 1929.

Additional & emended bibliography: DeWild., Plant. Bequaert.

5: 13--14. 1929; Moldenke, Known Geogr. Distrib. Verbenac., ed. 1, 49--51 & 104. 1942; H. N. & A. L. Moldenke, Plant Life 2: 79. 1948; Moldenke, Known Geogr. Distrib. Verbenac., ed. 2, 115, 117, 120, & 202. 1949; Moldenke, Phytologia 6: 108 & 116. 1957; Moldenke, Résumé 143, 145, 148, 150, & 478. 1959; Moldenke, Phytologia 8: 78. 1961; Moldenke, Résumé Suppl. 13: 3, 5, & 7. 1966.

The binomial, Vitex radula Mildbr., appears to have been proposed first as a hyponym on July 1, 1928, and validated on May 30, 1929. The binomial, V. robynsi DeWild., was also validly published in 1929, but as yet I have not been able to ascertain the exact month or day. I am therefore tentatively reducing it to synonymy under V. radula, since the two taxa are apparently conspecific. The type of V. robynsi, as has been stated previously, was collected by my good friend, Prof. Dr. Frans Hubert Edouard Arthur Walter Robyns (no. 1913) in a shrubby savanna at Kasenga, at an altitude of about 970 meters, in the Republic of the Congo, on April 8, 1926, and is deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels.

Recent collectors describe V. radula as semi-climbing or as a shrub, 3.5 m. tall, growing in rather wet or sandy soil, on shrubby or on secondary woody savannas, in deciduous forests, secondary evergreen forests, dense Brachystegia-Pterocarpus forests, or Brachystegia forests with groups of Oxytenanthera abyssinica in black sandy soil with granite boulders, at 800 to 1100 meters altitude, called "bebesuco" or "linuna-nuna", flowering in February, and fruiting from February to April and in June. The corollas are described as "white" on Barbosa 1037.

The Torre 1268, distributed as V. radula, is actually V. thyr-siflora J. G. Baker.

Additional & emended citations: CONGO LEOPOLDVILLE: Robyns 1913 (Br, Br, N--photo, Z--photo). ZAMBIA: Bredo 4008 (Br, N). PORTUGUESE EAST AFRICA: Cabo Delgado: Torre & Paiva 12005 (Ul). Manica e Sofala: Andrada 1059 (Ul); Barbosa 1037 (Ul, Z), 1583 (Ul); Torre 4340 (Rf, Ul). Niassa: Torre & Paiva 10732 (Ul), 10951 (Ul, Z).

VITEX RAPINI Beauvis.

Emended synonymy: Vitex rapinii Beauvis. ex Moldenke, Résumé 388, in syn. 1959; Guillaum., Mém. Mus. Nat. Hist. Nat. Paris B. 15: 315. 1967.

Additional bibliography: Prain, Ind. Kew. Suppl. 3: 189. 1908; Moldenke, Résumé 206, 342, 388, & 478. 1959; Moldenke, Phytologia 8: 78. 1961; Guillaum., Thorne, & Viot, Univ. Iowa Stud. Nat. Hist. 20 (7): 45. 1965; Guillaum., Mém. Mus. Nat. Hist. Nat. Paris B. 15: 315. 1967.

Guillaumin, Thorne, & Vitot (1965) cite Thorne 28541 from New Caledonia. Guillaumin (1967) states that the species grows in serpentine at 900 meters altitude, and cites Baumann 8234.

VITEX RAPINIOIDES Guillaum.

Emended synonymy: Vitex rapinoides Guillaum. ex A. W. Hill, Ind. Kew. Suppl. 9: 297. 1938.

Additional & emended bibliography: A. W. Hill, Ind. Kew. Suppl. 9: 297. 1938; Moldenke, Résumé 205, 388, & 478, 1959; Moldenke, Phytologia 8: 78. 1961.

Additional citations: MELANESIA: NEW HEBRIDES: Aneityum: J. P. Wilson s.n. [Kajewski 992] (Bi—isotype). Efate: Kajewski 211 (Bi). Eromanga: Kajewski 299 (Bi).

VITEX REGNELLIANA Moldenke

Additional bibliography: E. J. Salisb., Ind. Kew. Suppl. 11: 265. 1953; Moldenke, Phytologia 6: 83, 84, 89, & 110—112. 1957; Moldenke, Résumé 112 & 478. 1959.

VITEX REHMANNI Gürke

Emended synonymy: Vitex rehmannii Gürke ex Moldenke, Alph. List Invalid Names 55, in syn. 1942; J. Hutchinson, Botanist in South. Afr. 335. 1946.

Additional bibliography: Thiselt.-Dyer, Ind. Kew. Suppl. 2: 194. 1904; Watt & Breyer-Brandwijk, Med. & Poison, Fl. S. Afr., ed. 1, 154 & 241. 1932; J. Hutchinson, Botanist in South. Afr. 335. 1946; Moldenke, Phytologia 6: 24. 1957; Moldenke, Résumé 154, 388, & 478. 1959; Moldenke, Phytologia 8: 78—79. 1961; Watt & Breyer-Brandwijk, Med. & Poison, Fl. S. Afr., ed. 2, 1055 & 1454. 1962; R. H. Compton, Journ. S. Afr. Bot. Suppl. 6: 66. 1966.

The corollas are described as "white" on Sidey 1310. Hutchinson (1946) cites his no. 2148, which, he says, had "mauve" corollas. Compton (1966) records the species from Swaziland.

Additional citations: SOUTH AFRICA: Transvaal: Schlieben 7526 (N); Sidey 1310 (S).

VITEX REHMANNI f. SUBTOMENTOSA Moldenke

Additional bibliography: Moldenke, Résumé 154, 388, & 478. 1959; Moldenke, Phytologia 8: 79. 1961.

VITEX RESINIFERA Moldenke

Bibliography: Moldenke, Phytologia 3: 446—447. 1951; Moldenke in Humbert, Fl. Madag. 174: 72, 84—86, & 273, fig. 11 (4—6). 1956; Moldenke, Phytologia 6: 114. 1957; Moldenke, Résumé 157 & 478. 1959; G. Taylor, Ind. Kew. Suppl. 12: 151. 1959.

Illustrations: Moldenke in Humbert, Fl. Madag. 174: 85, fig. 11 (4—6). 1956.

VITEX RIVULARIS Gürke

Additional bibliography: Prain, Ind. Kew. Suppl. 3: 189. 1908; F. R. Irvine, Pl. Gold Coast 438. 1930; Dalz., Useful Pl. W. Trop. Afr. 458. 1937; Aubrév., Fl. For. Cot. Iv., ed. 2, 3: 233, pl. 336, fig. 5—7. 1959; F. R. Irvine, Woody Pl. Ghana 764. 1961; Moldenke, Phytologia 8: 79. 1961; Huber in Hutchinson & Dalz., Fl. W. Trop. Afr., ed. 2, 2: 445 & 446. 1963; Moldenke, Résumé Suppl. 12: 7.

1965; Moldenke, Phytologia 15: 254 & 256. 1967.

Illustrations: Aubrév., Fl. For. Cot. Iv., ed. 2, 3: pl. 336, fig. 5--7. 1959.

Recent collectors and authors describe this plant as a forest tree, 30--75 feet tall, the stem with thin bark, often fluted, the bark whitish-green or brown, fairly smooth, papery, longitudinally furrowed, the wood soft or hard and white, the slash olive-brown, with brownish longitudinal lines; leaves digitate; leaflets 5--7, elliptic-lanceolate, long-petiolulate, 15 cm. long, 5 cm. wide, entire, acuminate at the apex, pubescent beneath, the secondaries 12 pairs; flowers small, numerous, white, lilac-tipped or tinged with purple, bluish in bud, borne in open, slender, rich, long-pedunculate, wide-spreading cymes which are dichotomously branched; fruit edible, black, ellipsoid or obovoid, 1/2 inch long, borne in an enlarged cup-shaped fruiting-calyx.

The species grows in deciduous forests, flowering in April and May, fruiting in June, July, and October. The fruit is eaten by game. Additional vernacular names recorded for it are "ash", "akwakora gyahina", "(m)bli", "m'vassa", "ntarowa", "otwe", and "otwe ntarowa".

Huber (1963) states that the species occurs also in French Cameroun and the Congo. The Zenker s.n. [Bipindi], distributed as V. rivularis, is actually V. longipetiolata Gürke.

Huber (1963) cites the following collections: GHANA: F. R. Irvine 951; Vigne FH.865, 895, & 1094. LIBERIA: Baldwin 6285 & 6491. IVORY COAST: Chevalier 19097. SOUTHERN NIGERIA: Jones & Onochie FHI.18760; Kennedy 910. BRITISH CAMEROONS: Mildbraed 10535.

Additional citations: CAMEROONS: Zenker 3764 (W-554189). ANGOLA: Cabinda: Monteiro & Murta 89 (U1).

VITEX ROBYNSI DeWild.

This taxon is now regarded as conspecific with V. radula Mildbr. and should therefore be removed from my list of valid and accepted taxa.

VITEX RUBRA Moldenke

Bibliography: Moldenke, Phytologia 3: 447. 1951; Moldenke in Humbert, Fl. Madag. 174: 75, 115, 117--118, & 273, fig. 17 (6--8). 1956; Moldenke, Phytologia 6: 116--117. 1957; Moldenke, Résumé 157 & 478. 1959; G. Taylor, Ind. Kew. Suppl. 12: 151. 1959.

Illustrations: Moldenke in Humbert, Fl. Madag. 174: 115, fig. 17 (6--8). 1956.

VITEX RUBRO-AURANTIACA DeWild.

Additional & emended bibliography: A. W. Hill, Ind. Kew. Suppl. 8: 249. 1933; Moldenke, Résumé 143 & 478. 1959; Moldenke, Phytologia 8: 79. 1961.

Additional citations: CONGO LEOPOLDVILLE: Louis 518 (B), 5786

(B), 6174 (B).

VITEX RUFESCENS A. L. Juss.

Additional bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 200 (1817) and ed. quart., 2: 246. 1818; Pers., Sp. Pl. 3: 360. 1819; Steud., Nom. Bot., ed. 1, 888. 1821; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1214 (1895) and pr. 2, 2: 1214. 1946; Hill & Salisb., Ind. Kew. Suppl. 10: 244. 1947; Moldenke, Phytologia 5: 430 (1956) and 6: 83. 1957; Moldenke, Résumé 112, 387, 389, & 478. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1214. 1960; Moldenke, Résumé Suppl. 12: 9. 1965; Moldenke, Phytologia 15: 247. 1967.

Tavares describes this species as a tree, about 5 m. tall, with a trunk diameter of 20 cm., known as "tamanqueiro", and found growing on the grounds of the Escola Agronomia do Nordeste at Paraiba, with the comment "Cultavada?". It was misidentified and specimens distributed as V. guerkeana Hiern.

An isotype of V. perriana — Blanchet 3434 — in the herbarium of the Conservatoire et Jardin Botaniques at Geneva was photographed there by Macbride as his type photograph number 30187, while the actual type, in the herbarium of the Muséum National d'Histoire Naturelle at Paris was photographed by him as his type photograph number 39501.

It should be noted that the H.B.K. reference dates given above have been authenticated by consultation of the work by Barnhart (1902) on this subject.

Additional citations: BRAZIL: Bahia: Blanchet 3434 [Macbride photos 30187 & 39501] (W—photo, W—photo). Rio de Janeiro: H. F. Martins 209 [Herb. Cent. Pesq. Florest. 574] (Z). CULTIVATED: Brazil: Tavares 856 (W—2403810).

VITEX RUFESCENS var. ABLUDENS (Moldenke) Moldenke

Additional bibliography: Moldenke, Phytologia 6: 120—121. 1957; Moldenke, Résumé 112, 388, & 478. 1959.

VITEX SAMPSONI Hance

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1214. 1895; Dunn & Tutchner, Kew Bull. Misc. Inf. Addit. Ser. 10: 204. 1912; Hand.-Mazz., Ann. Hort. Gothenb. 9: 68. 1934; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 1214. 1946; Moldenke, Résumé 171 & 478. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1214. 1960; Moldenke, Phytologia 8: 79—80. 1961.

The Levine collection, cited below, is marked "topotype".

Additional citations: CHINA: Kwangtung: C. O. Levine s.n. [Herb. Canton Chr. Coll. 746] (W—779018).

VITEX SCABRA Wall.

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1214 (1895) and pr. 2, 2: 1214.

1946; Moldenke, *Phytologia* 6: 122. 1957; Moldenke, *Résumé* 166 & 478. 1959; Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 3, 2: 1214. 1960.

VITEX SCANDENS Moldenke

Bibliography: Moldenke, *Phytologia* 4: 63--64 (1952) and 6: 122. 1957; Moldenke, *Résumé* 202, 388, & 478. 1959; G. Taylor, *Ind. Kew. Suppl.* 12: 151. 1959; Moldenke, *Résumé Suppl.* 12: 8. 1965.

Clemens describes this plant as a scandent shrub, with flowers "dull brick purple with yellowish margin", growing at 2500 to 4500 feet altitude.

Additional citations: MELANESIA: NEW GUINEA: Northeastern New Guinea: M. S. Clemens 41775a (A).

VITEX SCHAUERIANA Moldenke

Additional bibliography: Hill & Salisb., *Ind. Kew. Suppl.* 10: 244. 1947; Moldenke, *Phytologia* 6: 123--124. 1957; Moldenke, *Résumé* 112, 386, & 478. 1959.

A cotype specimen of this species -- Blanchet 2782 -- in the herbarium of the Conservatoire et Jardin Botaniques at Geneva, was photographed there by Macbride as his type photograph number 30188, while another of the same collection, deposited in the herbarium of the Naturhistorisches Museum at Vienna, is his type photograph number 34300.

Additional citations: BRAZIL: Bahia: Blanchet 2782 [Macbride photos 30188 & 34300] (W--photo of cotype); Fröes 20182 (W--2439045).

VITEX SCHLIEBENI Moldenke

Additional bibliography: Moldenke, *Résumé Suppl.* 1: 9. 1959; Moldenke, *Biol. Abstr.* 35: 1688. 1960; Moldenke, *Phytologia* 8: 80. 1961; Hocking, *Excerpt. Bot. A.* 4: 592. 1962; G. Taylor, *Ind. Kew. Suppl.* 13: 144. 1966.

Additional citations: TANGANYIKA: Schlieben 6008 (N--isotype, W--2214711--isotype).

VITEX SCHOMBURGKIANA Schau.

Additional bibliography: Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 2: 1214 (1895), pr. 2, 2: 1214 (1946), and pr. 3, 2: 1214. 1960; Moldenke, *Phytologia* 8: 80. 1961.

The type specimen of this species -- M. R. Schomburgk 421 -- deposited in the herbarium of the Botanischer Garten und Museum at Berlin, was photographed there by Macbride as his type photograph number 17566, but is now destroyed.

Additional citations: BRITISH GUIANA: M. R. Schomburgk 421 [Macbride photos 17566] (W--photo of type).

VITEX SCHOMBURGKIANA var. **GRANDIFLORA** Moldenke

Additional bibliography: Moldenke, *Phytologia* 6: 126. 1957; Moldenke, *Résumé* 112 & 478. 1959.

VITEX SEBESIAE H. J. Lam

Additional bibliography: A. W. Hill, *Ind. Kew. Suppl.* 7: 252. 1929; Moldenke, *Phytologia* 6: 126—128. 1957; Moldenke, *Résumé* 198 & 478. 1959.

VITEX SECUNDIFLORA H. Mallier

Additional bibliography: A. W. Hill, *Ind. Kew. Suppl.* 6: 219. 1926; Moldenke, *Biol. Abstr.* 32: 222 & 2353. 1958; Moldenke, *Résumé* 191 & 478. 1959; Moldenke, *Phytologia* 8: 80. 1961; Hocking, *Excerpt. Bot. A.5:* 42. 1962.

VITEX SEINERI Gürke

Additional & emended bibliography: A. W. Hill, *Ind. Kew. Suppl.* 8: 249. 1933; Moldenke, *Phytologia* 6: 129. 1958; Moldenke, *Résumé* 148 & 478. 1959.

VITEX SELLOWIANA Cham.

Additional bibliography: Jacks. in *Hook. f. & Jacks., Ind. Kew.*, pr. 1, 2: 1213 & 1214 (1895) and pr. 2, 2: 1213 & 1214. 1946; Hill & Salisb., *Ind. Kew. Suppl.* 10: 244. 1947; Jacks. in *Hook. f. & Jacks., Ind. Kew.*, pr. 3, 2: 1213 & 1214. 1960; Moldenke, *Phytologia* 8: 80. 1961.

The type specimen of this species -- Sellow 1437 -- deposited in the herbarium of the Botanischer Garten und Museum at Berlin, was photographed there by Macbride as his type photograph number 17567, but is now destroyed.

Additional citations: BRAZIL: Rio Grande do Sul: Sellow 1437 [Macbride photos 17567] (W--photo of type).

VITEX SERETI DeWild.

Additional bibliography: Prain, *Ind. Kew. Suppl.* 4, pr. 1, 248 (1913) and pr. 2, 248. 1958; Moldenke, *Phytologia* 6: 132. 1958; Moldenke, *Résumé* 143 & 478. 1959.

VITEX SIAMICA F. N. Will.

Additional bibliography: Prain, *Ind. Kew. Suppl.* 3: 189. 1908; Fletcher, *Kew Bull. Misc. Inf.* 1938: 432 & 435. 1938; Anon., *Kew Bull. Gen. Index* 1929—1956, 293. 1959; Moldenke, *Phytologia* 8: 80. 1961.

Recent collectors have found this plant growing on limestone rock walls at sealevel, flowering in August.

Additional citations: THAILAND: Larsen, Smitinand, & Warneke 1238 (Ac).

VITEX SIMPLICIFOLIA Oliv.

Additional synonymy: Vitex cordata Aubrév., *Fl. Forest. Soudano-Guin.* 504. 1950.

Additional & emended bibliography: Gürke in *Engl., Pfl. Ost-Afr. C:* 339. 1895; Jacks. in *Hook. f. & Jacks., Ind. Kew.*, pr. 1, 2: 1214. 1895; K. Schum. in *Just, Bot. Jahresber.* 28 (1): 497. 1902; Thiselt.-Dyer, *Ind. Kew. Suppl.* 2: 194. 1904; J. H. Holland,

Kew Bull. Addit. Ser. 9 [Useful Pl. Nigeria 3]: 526. 1915; Lely, Useful Trees N. Nigeria 116. 1925; Dalz., Useful Pl. W. Trop. Afr. 457. 1937; Aubrév., Fl. Forest. Soudano-Guin. 504. 1950; Moldenke, Phytologia 5: 305. 1955; Moldenke, Résumé 133, 134, 136--140, 143, 381, 383, 389, & 478. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1214. 1960; F. R. Irvine, Woody Pl. Ghana 764. 1961; Moldenke, Phytologia 8: 80. 1961; Jaeger & Winkoun, Bull. Inst. Franc. Afr. Noir 24 [ser. A, no. 1]: 79. 1962; Huber in Hutchinson & Dalz., Fl. W. Trop. Afr., ed. 2, 2: 445 & 447. 1963; Moldenke, Biol. Abstr. 48: 10099. 1967; Moldenke, Phytologia 15: 100 & 232 (1967) and 16: 498. 1968.

Huber (1963) reduces V. vogelii J. G. Baker to synonymy under V. simplicifolia. I regard it as a variety.

Recent collectors and authors describe V. simplicifolia as a small tree or shrub, to 15 feet tall and with 1 foot girth, "often larger (?)", with dense pale indumentum; leaves 1- or 3-foliolate on the same tree, the leaflets 5 inches long, 4 1/2 inches wide, broadly elliptic, densely pubescent beneath when young, the secondaries 8 pairs, the petioles pubescent; flowers small; corolla greenish or mauve, tomentose, the lobes blue-purple or violet; fruit small, obovoid, violet-black, over 1/2 inch long, 3-celled, on a hard saucer-shaped fruiting-calyx or "cupped like an acorn", with a thin edible pulp, and a large 3- or 4-seeded stone.

The species is said to inhabit savannas, flowering from January to June, fruiting in March and June. The twigs are used in Northern Nigeria to make "tooth sticks" or "chew sticks". In the Ivory Coast a lotion is made from the bark to use in the treatment of skin diseases and toothache.

Additional vernacular names recorded for it are "abisa" and "nambara digali". The name, "bummere", recorded previously for the fruit, is applied also to the fruit of Hannoa undulata.

Huber (1963) cites the following collections: MALI: Aubréville 1868, Chevalier 2767, De Ganay 22. IVORY COAST: Aubréville 428, 1394, 1540, & 1967-1969. DAHOMEY: Aubréville 46d & 57d. NORTH-EERN NIGERIA: Barter 1644, Dalziel 176, Dent Young 206, Lely 849 & P.197, Meikle 1070, Trueblood FHI.4319. SOUTHERN NIGERIA: Barter 1096. BRITISH CAMEROONS: Latilo & Daramola FHI.34490 [this collection I regard as V. simplicifolia var. vogelii, which see].

He also comments "Also in Cameroun, Uganda and extending to Egypt and Sudan". Irvine (1961) cites Brown 2286, Kinloch 3342, Kitson 689, and Vigne 3002, 3777, & 3786 from Ghana and says "Distribution: Fr. Sudan to Cameroons and Sudan".

VITEX SIMPLICIFOLIA var. VOGELII (J. G. Baker) Pieper

Additional bibliography: K. Schum. in Just, Bot. Jahresber. 28 (1): 497. 1902; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 194. 1904; Moldenke, Phytologia 8: 80--81. 1961; Huber in Hutchinson & Dalz., Fl. W. Trop. Afr., ed. 2, 2: 447. 1963.

Huber (1963) reduces this taxon to synonymy under typical V.

simplicifolia Oliv., but I am following Pieper in giving it varietal status. The Latilo & Daramola 34490, which I have previously cited as this variety, Huber cites under V. simplicifolia.

VITEX SNETHLAGIANA Huber

Bibliography: Moldenke, *Known Geogr. Distrib. Verbenac.*, ed. 1, 39 & 104. 1942; H. N. & A. L. Moldenke, *Plant Life* 2: 84. 1948; Moldenke, *Known Geogr. Distrib. Verbenac.*, ed. 2, 95 & 202. 1949; Moldenke, *Phytologia* 6: 136—137. 1958; Moldenke, *Résumé* 112 & 478. 1959; G. Taylor, *Ind. Kew. Suppl.* 13: 144. 1966.

VITEX SPRUCEI Briq.

Additional bibliography: Thiselt.-Dyer, *Ind. Kew. Suppl.* 2: 194. 1904; A. W. Hill, *Ind. Kew. Suppl.* 9: 298. 1938; Moldenke, *Biol. Abstr.* 33: 1215. 1959; Moldenke, *Phytologia* 8: 81. 1961; Hocking, *Excerpt. Bot. A.5:* 44. 1962.

The type specimen of this species — Spruce 2767 — deposited in the herbarium of the Conservatoire et Jardin Botaniques at Geneva, was photographed there by Macbride as his type photograph number 24705.

France, Pena, Forero, Ramos, & Monteiro 3938 is said to have had its corollas "white with yellow center", and these collectors describe the plant as a tree, 22 m. tall, with a trunk diameter to 45 cm.

The Murça Pires 781, distributed as V. sprucei, is not verbenaceous; it is probably something in the Bignoniaceae.

Additional citations: BRAZIL: Amazônas: Ducke 51 (W—1693056, W—1875284); Fróes 20510 (W—2439073); France, Pena, Forero, Ramos, & Monteiro 3938 (N, Rf); Spruce 2767 [Macbride photos 24705] (W—photo of type).

VITEX SPRUCEI var. LONGIDENTATA (Moldenke) Moldenke

Additional bibliography: Moldenke, *Phytologia* 6: 139—140. 1958; Moldenke, *Résumé* 112, 389, & 478. 1959.

Additional citations: BRAZIL: Amazônas: Fróes 21398 (W—2439613).

VITEX SPRUCEI var. VAUPESENSIS Moldenke

Additional bibliography: Moldenke, *Biol. Abstr.* 33: 1215. 1959; Moldenke, *Phytologia* 8: 81. 1961; Hocking, *Excerpt. Bot. A.5:* 44. 1962.

VITEX STAHELII Moldenke

Additional bibliography: E. J. Salisb., *Ind. Kew. Suppl.* 11: 265. 1953; Moldenke, *Phytologia* 8: 81. 1961.

Berti describes this plant as "Arbol de 28 m. de altura total x 102 cm., yema terminal: complanada contorno más o menos cónico. Ramitas terminales, verdes con lenticelas alargadas y cremosas. Fruto: color morado negruzco. Semilla 1, envuelta en una pulpa cremosa, carnosa". It has been found in flower and fruit in May.

Additional citations: VENEZUELA: Bolívar: E. L. Little 17659 (Ve). Delta Amacuro: Berti 143 (N, S, Z), 163 (Ac, N); Wurdack & Monachino 39648 (N).

VITEX STELLATA Moldenke

Bibliography: Moldenke, *Phytologia* 3: 448. 1951; Moldenke in Humbert, *Fl. Madag.* 174: 76, 125, 126, & 273, fig. 19 (4-6). 1956; Moldenke, *Phytologia* 6: 142--143, 1958; G. Taylor, *Ind. Kew. Suppl.* 12: 151. 1959; Moldenke, *Résumé* 157 & 478. 1959.

Illustrations: Moldenke in Humbert, *Fl. Madag.* 174: 125, fig. 19 (4-6). 1956.

VITEX STRICKERI Vatke & Hildebr.

Additional bibliography: Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 2: 1214 (1895), pr. 2, 2: 1214 (1946), and pr. 3, 2: 1214. 1960; Moldenke, *Phytologia* 8: 81--82. 1961.

Recent collectors describe this plant as a much-branched or scrambling shrub, to 4 or 5 feet tall, with rough bark, colorless sap, and panicles of aromatic flowers, the calyx brownish-green, filaments cream, and anthers brown, growing in groups in thickets on red-brown loam, the margins of thickets in Brachystegia woodlands, or very local in Acalypha fruticosa - Acacia - Croton - Haplocoelum - Grewia similis open to closed brushland on shallow black cotton soil with lava rock pavements, to 2000 meters altitude, flowering in February. The corolla is said to have been "white" on Tanner 3420, "white tubular" on Greenway 9175, and "cream" on Drummond & Hemsley 1810.

Additional citations: UGANDA: Mearns 280 (W-630295). TANGAN-
YIKA: Drummond & Hemsley 1810 (B); Tanner 2383 (B), 3420 (S).
KENYA: Greenway 9175 (B).

VITEX STYLOSA Dop

Additional & emended bibliography: A. W. Hill, *Ind. Kew. Suppl.* 9: 298. 1938; Moldenke, *Phytologia* 6: 143--144. 1958; Moldenke, *Résumé* 177 & 478. 1959.

VITEX SUMATRANA Miq.

Additional bibliography: Jacks. in Hook. f. & Jacks., *Ind. Kew.*, pr. 1, 2: 1214 (1895), pr. 2, 2: 1214 (1946), and pr. 3, 2: 1214. 1960; Moldenke, *Phytologia* 8: 82. 1961.

VITEX SWYNNERTONII S. Moore

Additional bibliography: Prain, *Ind. Kew. Suppl.* 5, pr. 1, 273 (1921) and pr. 2, 273. 1960; Moldenke, *Phytologia* 8: 82. 1961.

VITEX TANGENSIS Gürke

Additional & emended bibliography: Gürke in Engl., *Pflanzenw. Ost-Afr. C:* 339--340. 1895; K. Schum. in Just, *Bot. Jahresber.* 28 (1): 497. 1902; Thiselt.-Dyer, *Ind. Kew. Suppl.* 2: 194. 1904; Durand & Jacks., *Ind. Kew. Suppl.* 1, pr. 1, 457 (1906), pr. 2, 457

(1941), and pr. 3, 457. 1959; Moldenke, *Phytologia* 8: 82. 1961; Cuf., *Bull. Jard. Bot. Brux.* 32: Suppl. 797—798. 1962; Moldenke, *Phytologia* 15: 315 (1967) and 16: 496. 1968.

Recent collectors describe this plant as a shrub, 1.5—4 m. tall, several times or much branched from the base or near the base, many-stemmed, the bark pale gray-yellow, very finely reticulate. The corolla is described as "blue" on F. A. Mendonca 2705, "blue-lilac" on Balsinhas 242, "violet" on Torre 958, "lower lip violet" on Torre 2277, "cor de malva" on Junod 414, and "corolla-tube purple-mauve, large petal mauve, with yellow around the throat, throat purplish-mauve, the other petals white, filaments pale-mauve" on Polhill & Paulo 723.

The species has been found growing in deciduous forests, in the substratum in dense forests, and in dune forests with Azelia quanzensis, Dalium schlechteri, Garcinia livingstonei, Strychnos sp., etc. It is said to be common in the bush around cultivated land, with Adansonia, Allophylus, Carissa, Grewia, Hoslundia, Lanea, Sterculia, Strychnos, Thespesia, etc., flowering in November and December.

Material has been misidentified and distributed in herbaria as V. amboniensis Gürke. Torre 6323 is a mixture with V. oxycuspis var. mossambicensis Moldenke. Torre 2277 is said to match well L. E. Codd 5434 in the British Museum and Kew herbaria, while F. A. Mendonca 2365 and Torre 3829 are said to match Volkens 92, the type of the species, at the British Museum. Torre 3829 is, however, described by Garcia as "intermediate" between V. amboniensis and V. tangensis. The A. Peter 39696, previously cited by me as deposited in my personal herbarium, is now in the herbarium of the Texas Research Foundation at Renner, Texas.

Additional citations: KENYA: Polhill & Paulo 723 (S). PORTUGUESE EAST AFRICA: Inhambane: Torre 3829 (U1). Lourenço Marques: Balsinhas 242 (U1); Junod 414 (U1); Torre 2067 (U1, Z), 2277 (U1). Manica e Sofala: F. A. Mendonca 2365 (U1), 2705 (U1); Simão 220 (U1); Torre 6323, in part (Rf, U1, U1). Mozambique: Torre 958 (U1).

VITEX TELORAVINA J. G. Baker

Emended synonymy: Vitex teleravina J. G. Baker apud Durand & Jacks., *Ind. Kew. Suppl.* 1, pr. 1, 457, sphalm. 1906.

Additional & emended bibliography: Durand & Jacks., *Ind. Kew. Suppl.* 1, pr. 1, 457 (1906) and pr. 2, 457. 1941; Moldenke in Humbert, *Fl. Madag.* 174: 77, 139, 141—142, & 273, fig. 22 (8 & 9). 1956; Moldenke, *Phytologia* 6: 147—148. 1958; Durand & Jacks., *Ind. Kew. Suppl.* 1, pr. 3, 457. 1959; Moldenke, *Résumé* 157, 389, & 478. 1959.

Illustrations: Moldenke in Humbert, *Fl. Madag.* 174: 139, fig. 22 (8 & 9). 1956.

VITEX THOMASI DeWild.

Additional & emended bibliography: A. W. Hill, Ind. Kew. Suppl. 8: 249. 1933; Moldenke, Phytologia 6: 148--149. 1958; Moldenke, Résumé 143 & 478. 1959.

VITEX THOMASI f. KASAIENSIS DeWild.

Bibliography: DeWild., Contrib. Etud. Fl. Katanga Suppl. 2: 108--109. 1929; Moldenke, Phytologia 6: 149--150. 1958; Moldenke, Résumé 143 & 478. 1959.

VITEX THONNERI DeWild.

Additional & emended bibliography: A. W. Hill, Ind. Kew. Suppl. 6: 219 (1926) and 8: 249. 1933; Moldenke, Phytologia 6: 150. 1958; Moldenke, Résumé 140, 143, & 478. 1959.

VITEX THONNERI var. TIBATENSIS (Engl.) Pieper

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 8: 249. 1933; Moldenke, Phytologia 6: 151. 1958; Moldenke, Résumé 139, 389, & 478. 1959.

VITEX THORELII Dop

Additional & emended bibliography: A. W. Hill, Ind. Kew. Suppl. 9: 298. 1938; Moldenke, Phytologia 6: 151--152. 1958; Moldenke, Résumé 177 & 478. 1959.

VITEX THYRSIFLORA J. G. Baker

Additional bibliography: Durand & Jacks., Ind. Kew. Suppl. 1, pr. 1, 457. 1906; Prain, Ind. Kew. Suppl. 3: 189. 1908; I. Bailey, Ecology 1: 174--189. 1920; Bequaert, Bull. Am. Mus. Nat. Hist. 45: 333--383. 1922; A. W. Hill, Ind. Kew. Suppl. 6: 219 (1926) and 9: 297. 1938; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 2, 457. 1941; Uphof, Bot. Rev. 8: 569--571. 1942; Durand & Jacks., Ind. Kew. Suppl. 1, pr. 3, 457. 1959; Moldenke, Phytologia 8: 82. 1961; Huber in Hutchinson & Dalz., Fl. W. Trop. Afr., ed. 2, 2: 445 & 446. 1963; Moldenke, Phytologia 15: 312. 1967.

Recent collectors and authors describe this plant as an under-shrub, shrub, or small tree, 2 m. tall, or a sarmentose shrub to 6 m. tall, with glabrous branches, 5-foliolate leaves, and small white flowers in terminal panicles, growing in forests or open *Brachystegia* forests, the herbaceous layer being dominated by *Digitaria* and *Panicum*, at 280 meters altitude, flowering from January to July and in September, fruiting from July to October, and called "namepéprlr". The corolla is described as "yellow" on Torre 1268.

Bailey (1920) found this species inhabited by the ant, *Viticola tessmanni*. The plant has lateral cavities or pits excavated in the woody parts of the stele of stout dry stems and branches. Furthermore, there are in stout stems exit-holes resembling those of the lateral pits subtended by them. This may be due to an inherent tendency to form hollow stems and branches. It is not known whether the ants accelerate formation of the cavities

throughout the center as has been demonstrated by Fiebrig with Cecropia. The pseudo-gall-like structures made by Viticicola are histologically very complex. The insects enter through the circular apertures in the swollen internodes. According to Bequaert (1922) this species of host has heteroplasias similar to those of Plectronia laurentii.

Dan Janzen, in a memorandum to my son, Andrew R. Moldenke, refers to the original description of V. staudtii Gürke as stating that the leaflets are glabrous on the under surface but densely covered with minute, golden-yellow glands. He continues "These glands are critical (if they are indeed glands) to understanding the myrmecophytic relationship that Viticicola has with Vitex staudtii." He speaks of discussions of this plant and its myrmecophily by Bequaert and by Bailey in Wheeler's "Ants of the Belgian Congo".

Material of V. thyrsoflora has been misidentified and distributed in herbaria as V. radula Mildbr.

Huber (1963) cites the following collections: GUINEA: Baldwin 9669; A. Chevalier 13199 & 13267; Jacques-Felix 852. SIERRA LEONE: Deighton 3747; N. W. Thomas 1692 & 1953. LIBERIA: J. T. Baldwin 6172, 9510, & 9945; Harley s.n. [Ganta]; Konneh 175. IVORY COAST: A. Chevalier 17055, 19340, & 19805. TOGO: Baumann 564. NORTHERN NIGERIA: Killick 67. SOUTHERN NIGERIA: Harrison 5; Olorunfemi FHI.38057; Rowland s.n. [W. Lagos]; Symington FHI. 5052; Talbot s.n. [Oban]. BRITISH CAMEROONS: Maitland 565 & 1577; Olorunfemi FHI.30608; Ujor FHI.29288. He comments "Extends to Congo".

Additional citations: SIERRA LEONE: N. W. Thomas 1692 (S). PORTUGUESE EAST AFRICA: Mozambique: Torre 1268 (U1); Torre & Paiva 9864 (U1).

VITEX THYRSIFLORA var. LAXIFLORA Pieper

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 7: 252. 1929; Moldenke, Phytologia 6: 153--154. 1958; Moldenke, Résumé 139, 386, & 478. 1959.

VITEX TOMENTULOSA Moldenke

Additional bibliography: A. W. Hill, Ind. Kew. Suppl. 9: 298. 1938; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14362. 1959; Moldenke, Phytologia 8: 83. 1961.

VITEX TRICHANTHA J. G. Baker

Additional & emended bibliography: Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1214 (1895) and pr. 2, 2: 1214. 1946; Moldenke in Humbert, Fl. Madag. 174: 75, 120--122, & 273, fig. 18 (4--6). 1956; Moldenke, Phytologia 6: 155--156. 1958; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1214. 1960.

Emended illustrations: Moldenke in Humbert, Fl. Madag. 174: 121, fig. 18 (4--6). 1956.

VITEX TRIFLORA Vahl

Additional & emended synonymy: Vitex sericea Poepp. ex Ettingsh., Blatt-Skel. Dikot. 79, pl. 32, fig. 6. 1861 [not V. sericea Poepp. ex Moldenke, 1936]. Pyrostoma ternatum G. F. W. Mey. apud Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 667. 1895. Vitex triflora tenuifolia Huber ex Stapf, Ind. Lond. 6: 479. 1931. Vitex trifolia Vahl ex Moldenke, Suppl. List Invalid Names 11, in syn. 1941 [not V. trifolia Graham, 1966, nor Hemsl., 1949, nor L., 1753, nor L. f., 1895, nor Moon, 1895, nor Sessé & Moc., 1940, nor "sensu Matsumura & Hayata", 1963].

Additional & emended bibliography: H.B.K., Nov. Gen. & Sp. Pl., ed. folio, 2: 200 (1817) and ed. quart., 2: 246. 1818; Pers., Sp. Pl. 3: 360. 1819; Steud., Nom. Bot., ed. 1, 888. 1821; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 1: 447 (1893) and 2: 667 & 1214. 1895; Barnhart, Bull. Torrey Bot. Club 29: 590. 1902; LeCointe, Amaz. Bras. III Arv. & Plant. Uteis, ed. 1, 430. 1934; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 1: 447 (1946) and 2: 667 & 1214. 1946; LeCointe, Amaz. Bras. III Arv. & Plant Uteis, ed. 2, 457. 1947; Hill & Salisb., Ind. Kew. Suppl. 10: 244. 1947; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 1: 447 (1960) and 2: 667 & 1214. 1960; Moldenke, Phytologia 8: 83. 1961; Soukup, Biota 5: 137. 1964; Moldenke, Résumé Suppl. 15: 25. 1967; Moldenke, Phytologia 15: 229, 242, & 267 (1967) and 16: 495. 1968.

It should be noted here that the V. trifolia of Linnaeus the elder is a valid species, with the homonym ascribed to Linnaeus the younger as a synonym, while the V. trifolia accredited to Graham is a synonym of V. negundo L., that ascribed to Hemsley and to "sensu Matsumura & Hayata" is V. trifolia var. simplicifolia Cham., that ascribed to Moon is V. altissima L. f., and that accredited to Sessé & Mociffo is V. mollis H.B.K.

LeCointe (1947) records the vernacular variant "tarumá da mata" and comments "Nas capoeiras e mata secundária. — E' a espécie mais vulgar de Amazônia....O fruto é emenágogo e diuretico; as fôlhas empregam-se contra as cistites e uretrites; a raiz é tônica e febrífuga."

The Huber (1909) reference in the bibliography of this species is dated "1907-8" by Stapf (1931), but 1909 seems to be the actual date when the pages in question appeared. It should be noted that the H.B.K. reference dates given above have been authenticated by consultation of the work by Barnhart (1902) on this subject.

The type specimen -- Herb. Vahl s.n. -- deposited in the herbarium of the Universitetets Botaniske Museum at Copenhagen, was photographed there by Macbride and is his type photograph number 22779.

The corollas on Murça Pires & Cavalcante 52602 are described as having been "purple", the flowers slightly fragrant, and the plant itself "rare".

The Archer 8047 and Barbosa de Silva 155, distributed as the

typical form of V. triflora, are actually var. coriacea Huber.

Additional citations: VENEZUELA: Amazonas: Ll. Williams 15688 (Ve--8096, W--2428824). BRAZIL: Amapá: Irwin, Murça Pires, & Westra 48311 (N); Murça Pires 48560 (M1, N); Murça Pires & Cavalcante 52602 (N, Rf); Murça Pires, Rodrigues, & Irvine 50466 (N). Amazônas: Krukoff 4704 (W--1662717), 6869 (W--1660920). Pará: Fróes 20381 (W--2439042); Killip & Smith 30598 (W--1464184); Murça Pires 51907 (N). LOCALITY OF COLLECTION UNDETERMINED: Herb. Vahl s.n. [ex India; Herb. Willdenow 11701; Macbride photos 22779] (W--photo of type).

VITEX TRIFLORA var. ANGUSTILOBA Huber

Synonymy: Vitex triflora angustiloba Huber apud Stapf, Ind. Lond. 6: 479. 1931.

Additional bibliography: Moldenke, *Phytologia* 6: 161--162. 1958; Moldenke, *Résumé* 112 & 478. 1959; Moldenke, *Résumé Suppl.* 15: 25. 1967.

The Huber (1909) reference in the bibliography of this variety is dated "1907-8" by Stapf (1931), but the pages involved seem to have appear first in 1909.

VITEX TRIFLORA var. CORIACEA Huber

Synonymy: Vitex triflora coriacea Huber apud Stapf, Ind. Lond. 6: 479. 1931.

Additional bibliography: Moldenke, *Phytologia* 6: 162. 1958; Moldenke, *Résumé* 112 & 478. 1959; Moldenke, *Résumé Suppl.* 15: 25. 1967.

Recent collectors describe this plant as a shrub, 2 feet tall, or a large tree, known as "piquia-rana", flowering in November and December. The corollas on Archer 8047 are said to have been "lavender".

The Huber (1909) reference cited in the bibliography of this variety is dated "1907-8" by Stapf (1931), but the pages involved appear not to have been issued until 1909.

Material has been inaccurately identified and distributed in herbaria as typical V. triflora Vahl.

Additional citations: BRAZIL: Pará: Archer 8047 (N); Barbosa de Silva 155 (N).

VITEX TRIFLORA var. FLORIBUNDA Huber

Additional synonymy: Vitex triflora floribunda Huber apud Stapf, Ind. Lond. 6: 479. 1931.

Additional bibliography: Moldenke, *Phytologia* 6: 162--163. 1958; Moldenke, *Résumé* 112, 387, & 478. 1959; Moldenke, *Résumé Suppl.* 15: 25. 1967.

As mentioned above under the other varieties of this species, the Huber (1909) reference in the bibliography is cited as "1907-8" by Stapf (1931), but it seems that the pages involved here did not actually appear in print until 1909.

Additional citations: BRAZIL: Pará: Ducke 971 (W—1332289).

VITEX TRIFLORA var. KRAATZII Huber

Additional synonymy: Vitex triflora kraatzii Huber apud Stapf, Ind. Lond. 6: 479. 1931.

Additional bibliography: Moldenke, Phytologia 8: 83. 1961; Moldenke, Résumé Suppl. 15: 25. 1967.

The original publication of this variety by Huber (1909) is inaccurately cited by Stapf (1931) as "1907-8".

VITEX TRIFLORA var. QUINQUEFOLIOLATA Moldenke

Additional bibliography: Moldenke, Phytologia 8: 83. 1961.

The Ecuadorean collection cited below consists only of leaves and fruit and it is therefore placed here only tentatively.

Additional citations: ECUADOR: Guayas: Gilmartin 548 (W--2428412).

VITEX TRIFOLIA L., Sp. Pl., ed. 1, 638 [as "trifoliis"]. 1753

[not V. trifolia Graham, 1966, nor Hemsl., 1949, nor Moon, 1895, nor Sessé & Moc., 1940, nor Vahl, 1941, nor "sensu Matsumura & Hayata", 1963].

Additional & emended synonymy: Vitex triflora odorata, sylvestris J. Burm., Thes. Zeyl. 209--210, pl. 109. 1737. Vitex incisa Wall. apud Watt, Dict. Econ. Prod. India 6 (4): 251, in syn. 1893 [not V. incisa Bunge, 1927, nor Lam., 1788, nor Thunb., 1947]. Vitex agnus castus var. Kurz ex Watt, Dict. Econ. Prod. India 6 (4): 251, in syn. 1893. Vitex trifolia L. f. ex K. Schum., Notizbl. Bot. Gart. Berl. App. 1: 55, sphalm. 1895. Vitex trifoliolata L. apud J. Matsumura, Ind. Pl. Jap. 2 (2): 534--535. 1912. Vitex trifoliolata var. trifoliolata Schau. apud J. Matsumura, Ind. Pl. Jap. 2 (2): 534--535. 1912. Vitex trifolia α trifoliolata Cham. apud Hara, Enum. Sperm. Jap. 1: 191, in syn. 1948. Vitex trifolia α trifoliolata Schau. apud Hara, Enum. Sperm. Jap. 1: 191, in syn. 1948. Vitex trifolia trifoliolata "Schau. ex Blanco" apud Stapf, Ind. Lond. 6: 479. 1931. Vitex trifolia L. ex Hosokawa, Journ. Soc. Trop. Agr. Taiwan 6: 206, sphalm. 1934.

Additional & emended bibliography: J. Burm., Thes. Zeyl. 209--210 & 229, pl. 109. 1737; J. F. Gmel. in L., Syst. Nat., ed. 13, pr. 1, 2: 962 (1789) and pr. 2, 2: 962. 1796; Horsf., Verh. Bat. Gen. 8: 104. 1816; Pers., Sp. Pl. 3: 361. 1819; Steud., Nom. Bot., ed. 1, 888. 1821; Roxb., Fl. Ind., ed. 2 [Carey], 3: 69. 1832; Schnitzl., Icon. Fam. Nat. Reg. Veg. 137. 1856; Mason, Burmah & its People, ed. 2, 413, 479, & 792. 1860; Miq., Cat. Mus. Bot. Lugd.-Bat. 70. 1870; Beddome, Forester's Man. Bot. S. Ind. 172. 1873; Gamble, Man. Ind. Timb., ed. 1, 296. 1881; Watt, Econ. Prod. India 5: 294--295. 1883; Vidal, Phan. Cuming. Philip. 134. 1885; Warb. in Engl., Bot. Jahrb. 13: 428--429. 1891; Watt, Dict. Econ. Prod. India 6 (4): 251. 1893; W. A. Tal-

bot. Syst. List Trees Shrubs Bomb. 161 & 229. 1894; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1213 & 1214. 1895; K. Schum., Notizbl. Bot. Gart. Berl. App. 1: 55 (1895) and 1: 206. 1896; Anon., Notizbl. Bot. Gart. Berl. App. 1: 346. 1897; K. Schum., Notizbl. Bot. Gart. Berl. App. 2: 144-145. 1898; Anon., Notizbl. Bot. Gart. Berl. App. 2: 419. 1899; Gamble, Man. Ind. Timb., ed. 2, 539. 1902; Prain, Beng. Fl., ed. 1, 2: 832-833. 1903; C. B. Clarke in J. Schmidt, Bot. Tidsskr. 26: 173. 1904; E. D. Merr., Philip. Journ. Sci. Bot. 1, Suppl. 1: 121. 1906; Kawakami, List Pl. Formos. 85. 1910; Duthie, Fl. Upper Gang. Plain 2: 224. 1911; Craib, Kew Bull. Misc. Inf. 9: 443. 1911; Craib, Contrib. Fl. Siam Dicot. 164-165. 1912; Dunn & Tutcher, Kew Bull. Misc. Inf. Addit. Ser. 10: 204. 1912; J. Matsumura, Ind. Pl. Jap. 2 (2): 534-535. 1912; E. D. Merr., Interpret. Rumph. Herb. Amboin. 453, 524, & 594. 1917; H. J. Lam in Lam & Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 53. 1921; Haines, Bot. Bihar & Orissa 4: 711 & 712. 1922; Nakai, Trees & Shrubs Indig. Jap., ed. 1, 1: 350, fig. 190. 1922; H. N. Ridl., Journ. Malay Br. Roy. Asiat. Soc. 1: [Mal. For. Trees] 83. 1923; H. J. Lam in Engl., Bot. Jahrb. 59: 27, 28, & 92-93. 1924; C. J. F. Skottsberg, Medd. Göteborg. Bot. Trädg. 2 [Haw. Vasc. Pl.]: 259. 1925; Gamble, Fl. Presid. Madras 2: 1101 & 1102. 1924; Mezger, Ann. Mus. Col. Marseille, sér. 4, 4: pl. 60. 1926; A. W. Hill, Ind. Kew. Suppl. 7: 252. 1929; C. A. Gardn., Enum. Pl. Austr. Occid. 3: 112. 1931; A. W. Hill, Ind. Kew. Suppl. 8: 249. 1933; Kanehira, Fl. Micrones. 343 & 457. 1933; Tu, Chinese Bot. Dict., abrdg. ed., 1337. 1933; Hosokawa, Journ. Soc. Trop. Agr. Taiwan 6: 206. 1934; Terazaki, [Illustr. Fl. Jap.] fig. 2499. 1938; Fletcher, Kew Bull. Misc. Inf. 1938: 431-433. 1938; Corner, Gard. Bull. Straits Settl. 10: 256-260. 1939; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 1213 & 1214. 1946; Selling, Bishop Mus. Spec. Publ. 38: 275 & 411. 1947; L. H. Bailey, Man. Cult. Pl., ed. 2, 843, 844, & 1114. 1949; W. J. Bean in Chitenden, Roy. Hort. Soc. Dict. Gard. 4: 2250. 1951; Hocking, Dict. Terms Pharmacog. 166 & 243. 1955; Kuck & Tongg, Mod. Trop. Gard. 77 & 236. 1955; Darlington & Wylie, Chromosome Atl., pr. 1, 323, 1955; Moldenke in Humbert, Fl. Madag. 174: 71, 72, 79-83, & 273, fig. 10 (5 & 6). 1956; Anon., Biol. Abstr. 30: 4370. 1958; H. St. John, Nomencl. Pl. 74. 1958; Moldenke, Biol. Abstr. 32: 2353. 1958; Anon., Kew Bull. Gen. Index 1929-1956, 293. 1959; Nath, Bot. Surv. South. Shan States 304-305. 1960; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1213 & 1214. 1960; Darlington & Wylie, Chromosome Atl., pr. 2, 323. 1961; Moldenke, Phytologia 8: 83-84. 1961; Cave, Ind. Pl. Chromosome Numb. 2: 137. 1961; Deb, Bull. Bot. Surv. India 3: 315. 1961; Hocking, Excerpt. Bot. A.5: 42. 1962; Moldenke, Biol. Abstr. 37: 1062. 1962; F. R. Fosberg, Bishop Mus. Occas. Papers 23 (2): 41-42. 1962; Thothathri, Bull. Bot. Surv. India 4: 291. 1962; Hatusima, Mem. South. Indust. Sci. Inst. Kagoshima Univ. 3: 31. 1962; Van Steenis-Kruseman, Fl. Males. Bull. 3: 695 & LI. 1962; Li, Wood. Fl. Taiwan 973. 1963; Hocking, Excerpt. Bot. A.6: 534. 1963; Prain, Beng. Fl., ed. 2, 621 & 1012. 1963; Sharma & Mukhopadhyay, Journ. Genet. 58: 359,

366, 376, 379, & 539. 1963; E. E. Lord, *Shrubs & Trees Austral. Gard.*, rev. ed., 232. 1964; Cave, *Ind. Pl. Chromosome Numb.* 2: 331. 1964; Meminger, *Seaside Pl.* 32, 154, & 155, pl. 223. 1964; Duffy, *Journ. Appl. Ecol.* 1: 227--228, 231, 234, 242, 243, & 248. 1964; Straatmans, *Micronesica* 1: 115. 1964; Backer & Bakh., *Fl. Java* 2: 604 & 605. 1965; J. S. Beard, *Descrip. Cat. W. Austr. Pl.* 93. 1965; Moldenke, *Résumé Suppl.* 12: 8. 1965; Hånsel, Leuckert, Rimpler, & Schaaf, *Phytochem.* 4: 19 & 21. 1965; Quisumbing, *Govt. Sarawak Sympos. Ecol. Res. Humid Trop. Veg.* 35 & 36. 1965; Bose, *Handb. Shrubs* 96 & 97. 1965; Malick, *Bull. Bot. Surv. India* 8: 55. 1966; Gaussen & al., *Trav. Sect. Scient. & Tech. Inst. Franç. Pond. Hors ser.* 7: 71 & 104. 1966; T. C. Whitmore, *Guide Forests Brit. Solomon Isls.* 206. 1966; Lourteig, *Taxon* 15: 28. 1966; Moldenke, *Résumé Suppl.* 15: 15 & 25. 1967; Sauer, *Plants & Man Seychelles* 102. 1967; Moldenke, *Phytologia* 15: 78 & 267 (1967), 15: 472 (1968), and 16: 495. 1968.

Additional & emended illustrations: Terazaki, [*Illustr. Fl. Jap.*], fig. 2499. 1938; Moldenke in Humbert, *Fl. Madag.* 174: 79, fig. 10 (5 & 6). 1956; Meminger, *Seaside Pl.* 154, pl. 223. 1964.

Backer & Bakhuizen van den Brink (1965) describe this plant as being a very aromatic shrub, the stem erect, not rooting from the nodes, the leaflets 1--3, those of the 2- or 3-foliolate leaves either all sessile or the median (largest) leaflet on a petiolule of less than 0.5 cm. in length, ovate-elliptic to oblong-obovate, the largest leaflet of the 2- or 3-foliolate leaves 4--9.5 cm. long and 1.7--3.7 cm. wide, the unifoliolate leaves 2--6.5 cm. long, 1.3--3.5 cm. wide, all very densely covered with white or gray hairs beneath; panicles narrow, 3.5--24 cm. long; cymes 2--6.5 cm. long (including the 2--25 mm. long peduncle), 3--15-flowered, rather dense to rather lax; calyx 3--4.5 mm. long; corolla-tube 7--8 mm. long; median segment of the lower lip 4--6 mm. in diameter. They say that the species is found in teak forests, brushwood, secondary forests, and "periodically very much desiccating localities", and is also cultivated as a hedge-plant in Java. They make the further comment that "Some specimens closely approach the next species [*V. paniculata* Lam.]".

The corolla is described as having been "purple" on S. Olsen 879. Bose (1965) reports the plant as "very hardy, leaves simple or 3-foliolate", best propagated by the so-called "gootie" method. The plant has been collected in fruit in January as well as during the months previously recorded by me. Cave (1961, 1964) reports the diploid chromosome number for this species as 26 and 34.

Deb (1961) says of this plant: "lft. glabrous above, tomentose beneath, panicles white tomentose, corolla tomentose, lavender blue. Very common in valley, gregarious, in damp or moist waste land, along drains and roads or river banks" and cites his no. 128.

It should perhaps be noted here that the *V. trifolia* accredited to Graham is a synonym of *V. negundo* L., that ascribed to

Hemsley and to "sensu Matsumura & Hayata" is V. trifolia var. simplicifolia Cham., that accredited to Moon is V. altissima L.f., that of Sessé & Mociffo is V. mollis H.B.K., while that ascribed to Vahl is V. triflora Vahl.

According to Lourteig (1966) the name, V. trifolia L., is based on and typified by P. Hermann 70. Hocking (1955) informs us that the leaves of this plant have a volatile oil containing cineol and methyl alcohol, and that this oil is used medicinally. Additional vernacular names recorded for the plant are "Cayenne pepper", "hamago", "kyaung banm ye-kyi-yo-ban", "lagunding dagat", "mitsuba-hamagō", "pani-sanbhalu", "shiru-fūki", and "tachi-hamago".

Lord (1964) recommends the species for planting in coastal climates in Australia. Malick (1966) reports it not so common in West Bengal, citing Biswas 35. T. C. Whitmore (1966) cites Waterhouse 60 from the Solomon Islands. Vidal (1885) cites Cuming 1493 from the Philippines.

Duffy (1964) states that "Vitex trifolia" [surely one of the varieties, not the true species!] was introduced in 1858 on Ascension Island, having been received in a consignment of 228 species of plants from the Capetown Botanic Garden, and is now widespread on the island. He also avers that beetles are a form of insect life scarce on Ascension Island, but are found on this "Vitex trifolia", as well as on Opuntia and Acacia, there.

Straatmans (1964) informs us that V. trifolia is among the tropical seashore buoyant-seed plants in the coastal community on Eua island, but it is probable that he is here actually referring to var. bicolor (Willd.) Moldenke.

The Lam (1924) reference in the bibliography of this species is often cited as "1925", but the latter is merely the title-page date for the volume; the pages cited appeared in 1924. The Blanco (1878) reference is dated "1878-80" by Stapf (1931), but the plate which concerns us here seems to have been issued in 1878. The "Basu, Ind. Med. Pl. pl. 2499" references given by me in the bibliography published in 1958 should be deleted; they are the result of errors in transcription for Terazaki, [Illustr. Fl. Jap.] fig. 2499 (1938). Prain (1903) writes the Watt references given in the bibliography above as "E. D. 5: 181", but this is actually a paragraph reference, not a page reference!

The following incomplete bibliographic references occur in the literature of V. trifolia, but have not as yet been located by me in any library consulted: Aplin, Rep. on the Shan States, Settl. Rep. Chanda app. 6; Baden Powell, Pb. Pr. 364; Boorsma, Pflanzenstoffen 4: 111; Cooke, Oils & Oil-seeds 81; Fleming, Med. Pl. & Drugs [Asiatic Reser. 11] 184; Gazetteer Mysore & Coorg 1: 64; Koord., Natuurk Tijdschr. v. B. 1, 48: 89 and 20: 223; Ridl., Mal. Geneesmiddeln 28; Pharm. Ind. 163; Tijdschr. v. Land- en Tuinbouw en Boschcultuur 5: 554; Waitz, Practische Waarnemingen 10.

The D. Anderson 2143, Elmer 15236, Haenke s.n. [Mariana, 1792],

Kajewski 2417, and H. E. Parks 20857, distributed as typical V. trifolia, are all var. bicolor (Willd.) Moldenke; A. A. Heller 2731, Taam 1702, M. M. Townsend s.n. [Oct. 20, 1940], and C. Wright s.n. [Hong Kong] & s.n. [Bonin Islands] are var. simplicifolia Cham.; E. H. Bryan 1315, Chapin 853, E. Y. Dawson 19825, F. R. Fosberg 11981 & 36709, K. P. Fosberg 15, J. W. Gillespie 4380, S. K. Lau 270, J. W. Moore 696, Native collector DI.149 [Herb. Roy. Forest Dept. 3567], Quayle 1281, J. F. C. Rock 2325, 2969, 7838, & s.n. [S. Kona, April 28, 1958], H. Saint John 14252 & 16573, Schiffner 2454, A. C. Smith 4559 & 6078, A. M. Stokes 1, Toroos 910, and Waterhouse 60 [Herb. Mus. Yale Sch. Forest. 22664] are all var. subtrisecta (Kuntze) Moldenke; and H. Saint John 16705 is the type collection of var. subtrisecta f. albiflora Moldenke.

Additional citations: WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Mindoro: H. H. Bartlett 13707 (Mi). Papahag: S. Olsen 879 (Cp). INDONESIA: GREATER SUNDA ISLANDS: Sumatra: Yates 1480 (Mi), 1941 (Mi). MELANESIA: BISMARK ARCHIPELAGO: New Britain: Dissing 2722 (Cp, Z).

VITEX TRIFOLIA var. BICOLOR (Willd.) Moldenke

Additional synonymy: Vitex negundo var. bicolor Lam., in herb.

Additional & emended bibliography: Steud., Nom. Bot., ed. 1, 888. 1821; Bocq., Adansonia 3: [Rev. Verbenac.] 253. 1863; Watt, Dict. Econ. Prod. India 6 (4): 248. 1893; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1213. 1895; H. J. Lam in Engl., Bot. Jahrb. 59: 27—28 & 93. 1924; H. J. Lam in Bakh. & Lam, Nov. Guinea 14, Bot. 1: 169. 1924; A. W. Hill, Ind. Kew. Suppl. 8: 249. 1933; Corner, Gard. Bull. Straits Settl. 10: 257. 1939; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 1213. 1946; Hill & Salisb., Ind. Kew. Suppl. 10: 244. 1947; Moldenke in Humbert, Fl. Madag. 174: 72, 83, & 272—273. 1956; Yuncker, Fl. Tonga 232. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1213. 1960; Moldenke, Phytologia 8: 84—86. 1961; Backer & Bakh., Fl. Java 2: 605. 1965; B. C. Stone, Micronesica 2: 132. 1966; Moldenke, Phytologia 15: 306. 1967.

Backer & Bakhuizen van den Brink (1965) adopt the name, V. paniculata Lam., for this taxon, but admit that it is very frequently confused with V. negundo L. and is sometimes "difficult to be distinguished" from V. trifolia "with which it seems to hybridize." Corner (1939) says "This variety is so curiously intermediate between V. negundo and V. trifolia, that one cannot doubt that it covers their hybrids." Lam (1924) regarded Volkens 425, from Yap, as a hybrid between what he called V. negundo var. bicolor and V. trifolia var. trifoliolata. In regard to the theory that this taxon is a natural hybrid between V. negundo and V. trifolia, it is worth pointing out that it has been

collected — often abundantly — on at least seventy-five islands in the Pacific Ocean area on which V. negundo does not occur, or, at least, has never been found and is very unlikely to occur. I have no doubt that these two species do hybridize [see under V. negundo in these notes], but this taxon does not represent this hybrid. Nor do I feel that it is worthy of specific rank. As Backer and Bakhuizen van den Brink themselves admit, there are many specimens intermediate between it and the typical V. trifolia.

Recent collectors and writers describe this plant as a shrub, 6--12 feet tall, or a tree, 8--10 m. tall, with 3--5 leaflets per leaf, the petiole 2--6 cm. long, the middle leaflet on a petiole 0.5--2 cm. long, ovate-oblong or oblong-lanceolate, 3.5--10 cm. long, 1.5--3.5 cm. wide, very acutely acuminate at the apex, the 2 adjacent leaflets (in the 5-foliolate leaves) smaller or shorter-petioluled, the outermost leaflets (in 5-foliolate leaves) smallest, sessile or subsessile; panicles pyramidal-ovoid, lax, 6--20 cm. long, the cymes distinctly forked, 2--10 cm. long (inclusive of the peduncle which is 5--40 mm. long), many-flowered, lax; calyx 1.5--3 mm. long; corolla-tube 4--5 mm. long, the median lobe of the lower lip 3--4 mm. long and 2.5--3 mm. wide. The corolla is described as having been "blue" on Janowsky 518 and "pale-lilac" on Purseglove P.5015.

The plant has been collected on coral limestone, in thickets, above beaches, on sandy beaches and adjacent localities, especially on the older parts of the beach-wall, rarely more inland. Yuncker (1959) says that it is occasional throughout Tonga and notes for its general distribution "From eastern Africa and India through Malaysia to Polynesia. Presumably the V. trifolia of Hemsley's and Burkill's list." The leaves are used as a medicine in the treatment of fever in Samoa. Additional vernacular names recorded for it are "agulundi" and "gamulega". Stone (1966) records the plant from Nukuoro in the Caroline Islands, where it is known as "käsik".

It should be pointed out here that the Lam (1924) reference in the bibliography of this variety is often cited as "1925", but the latter date is merely the title-page date for the volume; the pages involved here appeared in the year 1924. In this work Lam cites Janowsky 518 from Dutch New Guinea, Hollrung 486, Lewandowsky 48, Nyman 210, and Schlechter 14253 from Northeastern New Guinea, Dahl 149 and Lauterbach 166 from New Britain, Kraemer s.n., Ledermann 14122, and Raymundus 178 from the Palau Islands, Kraemer s.n. and Ledermann 13531 from the Caroline Islands, and Haenke s.n. and Höfer 25 from the Mariana Islands. The Feuilleteau de Bruyn 414 which he also cites is actually f. albiflora (Kuntze) Moldenke. He notes that Lewandowsky 48 shows one 1-foliolate leaf.

The J. A. Price s.n. [May 10, 1943], distributed as var. bicolor, is actually var. variegata Moldenke.

Additional citations: TANGANYIKA: Tanner 2960 (S). ZANZIBAR: H. G. Faulkner 2389 (S). WESTERN PACIFIC ISLANDS: PHILIPPINE ISLANDS: Cagayan: Kondo & Edaño s.n. [Philip. Nat. Herb. 39032] (Bi). Luzon: Elmer 15236 (Bi). Mindanao: Elmer 11999 (Bi). Mindoro: G. T. Velasquez 11 (Bi). Naranjo: Kondo & Edaño s.n. [Philip. Nat. Herb. 38739] (Bi). Polillo: R. C. McGregor s.n. [Herb. Philip. Bur. Sci. 10270] (Bi). MARIANA ISLANDS: Guam: H. M. Mayo s.n. [Oct. 24, 1947] (Bi); P. Nelson 522 (Bi), 535 (Bi, Bi). Saipan: W. H. Lange 47 (Bi). Tinian: R. S. Cowan s.n. [April 3, 1945] (Bi); Hosokawa 7700 (Bi); Kanehira 55 (Bi); Kondo 1 (Bi), 58 (Bi). Island undetermined: Haenke s.n. [Mariana, 1792] (Bi). INDONESIA: GREATER SUNDA ISLANDS: Sarawak: Purseglove P. 5015 (N). Sumatra: Lüttjeharms 4655 (Bi, Bi). MICRONESIA: CAROLINE ISLANDS: Arekalong: Takamatsu 1697 (Bi). Dublon: Takamatsu 134 (Bi). Ifaluk: Abbott & Bates 78 (Bi). Kusaei: Takamatsu 487 (Bi). Lele: Glassman 2716 (Bi). Lukunor: D. Anderson 2143 (Bi). Ponape: Takamatsu 780 (Bi). MELANESIA: NEW GUINEA: Dutch New Guinea: Aet & Idjan 348 (A). SOLOMON ISLANDS: Florida: Seale s. n. [May 23, 1903] (Bi). Guadalcanal: Kajewski 2417 (Bi). NEW HEBRIDES: Aneityum: Kajewski 801 (Bi). YASAWA FIJI ISLANDS: Furlanga: A. C. Smith 1200 (Bi). Kansavu: A. C. Smith 314 (Bi). Koro: A. C. Smith 1075 (Bi). Ovalau: J. W. Gillespie 4503 (Bi, Bi). Taveuni: J. W. Gillespie 4687 [wood no. 2145] (Bi). Vanua Levu: A. C. Smith 6622 (Bi). Viti Levu: E. H. Bryan 208 (Bi); MacDaniels 1008 (Bi); Meebold 16492 (Bi), 21385 (Bi); H. E. Parks 20800 (Bi), 20857 (Bi); Tothill & Tothill 660 (Bi). LAU FIJI ISLANDS: Thithia: E. H. Bryan 556 (Bi). TONGAN ISLANDS: Eua: H. E. Parks 16178 (Bi). Nomuka: Yuncker 15901 (Bi). Tonga: McKern 27 (Bi). Tongatabu: Yuncker 15011 (Bi). POLYNESIA: WESTERN SAMOA: Savaii: E. Christophersen 936 (Bi), 2849 (Bi). Upolu: A. J. Eames 36 (Bi). EASTERN SAMOA: Ofu: Yuncker 9566 (Bi). Safotu: Vaupel 389 (Bi). Tau: D. W. Garber 611 (Bi); Yuncker 9104 (Bi). Tutuila: W. A. Setchell 531 (Bi). NIUE: Yuncker 10041 (Bi). COOK ISLANDS: Rarotonga: Parks & Parks 22573 (Bi); G. P. Wilder 1000 (Bi). CULTIVATED: Samoan Islands: D. W. Garber 995 (Bi); G. P. Wilder 48 [248] (Bi).

VITEX TRIFOLIA var. BICOLOR f. ALBIFLORA (Kuntze) Moldenke

Synonymy: Vitex agnus-castus f. negundodes f. albiflora Kuntze, Rev. Gen. Pl. 2: 510. 1891. Vitex agnus-castus var. negundodes f. albiflora Kuntze ex Moldenke, Résumé 380, in syn. 1959. Vitex trifolia var. bicolor f. albiflora Moldenke, Phytologia 8: 86. 1961. Vitex agnus-castus var. negundoides f. albiflora Kuntze, in herb.

Bibliography: Kuntze, Rev. Gen. Pl. 2: 510. 1891; H. J. Lam in Bakh. & Lam, Nov. Guin. 14, Bot. 1: 169. 1924; Moldenke, Résumé 380. 1959; Moldenke, Phytologia 8: 86. 1961.

Collectors describe this plant as a tree, 5 m. tall, the trunk 9 cm. in diameter, the leaves white beneath, and the corolla white.

The type of the form, as originally described by me, is H. E. Parks 16178, from Dia Island in the Tongan group. However, Kuntze apparently described the taxon earlier, based on a collection made by himself in Dakkan, Bombay, India. Since he also gave the taxon form rank, it is obvious that his description is the valid one and mine, being so much later, is illegitimate. His collection, therefore, becomes the true type of the taxon.

The Feuilleteau de Bruyn 444, cited by Lam (1924), apparently belongs to this form since its corollas as described as having been white. It was collected on Schouten Island, New Guinea, but I have not as yet been able to examine it, nor Kuntze's type.

VITEX TRIFOLIA var. PURPUREA Lord, Shrubs & Trees Austral.

Gard., rev. ed., 232 [as "trifolia 'purpurea'"]. 1964; Moldenke, Résumé Suppl. 15: 15. 1967.

The original description by Lord (1964) of this variety is "Vitex trifolia 'purpurea' with soft clean leaves, purple beneath". It is apparently cultivated in Australian gardens and I know nothing else about it.

VITEX TRIFOLIA var. SIMPLICIFOLIA Chan.

Additional & emended synonymy: Vitex trifolia var. unifoliata Miq., Cat. Mus. Bot. Lugd.-Bat. 70. 1870. Vitex trifolia var. unifoliata Schau. ex Kawakami, List Pl. Formos. 85. 1910. Vitex rotundifolia L. ex S. Sasaki, List Pl. Formos. 353 & 354. 1928. Vitex trifolia unifoliolata Schau. ex Stapf, Ind. Lond. 6: 479. 1931. Vitex trifolia unifoliolata "Schai. in DC." apud Worsdell, Ind. Lond. Suppl. 2: 501. 1941. Vitex trifolia ovata Mak. ex Worsdell, Ind. Lond. Suppl. 2: 501. 1941. Vitex agnus-castus η ovata (Thunb.) Kuntze ex Hara, Enum. Sperm. Jap. 1: 190, in syn. 1948. Vitex trifolia Hems1. apud Rehd., Bibliog. Cult. Trees 585, in syn. 1949 [not V. trifolia Graham, 1966, nor L., 1753, nor L. f., 1895, nor Moon, 1895, nor Sessé & Moc., 1940, nor Vahl, 1941]. Vitex trifolia subsp. litoralis Van Steenis, Blumea 8: 516. 1957. Vitex trifolia var. unifoliata DC. ex Moldenke, Phytologia 6: 184, in syn. 1958. Vitex trifolia var. unifoliolata DC. ex Moldenke, Phytologia 6: 184, in syn. 1958. Vitex rotundifolia var. rotundifolia Mizushima ex Moldenke, Phytologia 8: 86, in syn. 1961. Vitex trifolia var. ovata Schau. ex Moldenke, Phytologia 8: 86, in syn. 1961. Vitex trifolia "sensu Matsum. & Hayata" apud Li, Wood. Fl. Taiwan 834, in syn. 1963. Vitex trifolia var. unifolia Judd, in herb. Vitex trifolia β

unifoliata Schau., in herb. Vitex trifolia var. ovovata Mak., in herb.

Additional & emended bibliography: J. F. Gmel. in L., Syst. Nat., ed. 13, pr. 1, 2: 962 (1789) and pr. 2, 2: 962. 1796; Pers., Sp. Pl. 3: 359. 1819; Steud., Nom. Bot., ed. 1, 888. 1821; Hook. & Arn., Bot. Beechey Voy. 206, pl. 47. 1836; Miq., Cat. Mus. Bot. Lugd.-Bat. 70. 1870; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 1, 2: 1214. 1895; C. B. Clarke in J. Schmidt, Bot. Tidsskr. 26: 173. 1904; E. D. Merr., Philip. Journ. Sci. Bot. 1, Suppl. 1: 121. 1906; Matsumura & Hayata, Journ. Coll. Sci. Univ. Tokyo 22: 301. 1906; Kawakami, List Pl. Formos. 85. 1910; J. Matsumura, Ind. Pl. Jap. 2 (2): 534--535. 1912; H. J. Lam in Lam & Bakh., Bull. Jard. Bot. Buitenz., ser. 3, 3: 53. 1921; Nakai, Trees & Shrubs Indig. Jap., ed. 1, 1: 350, fig. 190. 1922; H. J. Lam in Engl., Bot. Jahrb. 59: 27. 1924; H. J. Lam in Bakh. & Lam, Nov. Guin. 14, Bot. 1: 169. 1924; C. J. F. Skottsberg, Medd. Göteborg. Bot. Trädg. 2 [Haw. Vasc. Pl. 1]: 259. 1925; S. Sasaki, List Pl. Formos. 353 & 354. 1928; Tu, Chinese Bot. Dict., abrdg. ed., 1337. 1933; Hosokawa, Journ. Soc. Trop. Agr. Taiwan 6: 206. 1934; Fletcher, Kew Bull. Misc. Inf. 1938: 431--433. 1938; J. Matsumura, [Bot. & Zool.] 10: 288, fig. 125. 1942; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 2, 2: 1214. 1946; Selling, Bishop Mus. Spec. Publ. 38: 275 & 411. 1947; Li & Keng, Taiwania 1 (2--4): 127. 1950; Van Steenis, Blumea 8: 516. 1957; Anon., Biol. Abstr. 30: 4370. 1958; Cave, Ind. Pl. Chromosome Numb. 1: 46. 1958; Moldenke, Biol. Abstr. 32: 2353. 1958; Anon., Kew Bull. Gen. Index 1929-1956, 293. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., pr. 3, 2: 1214. 1960; Kitamura & Okamoto, Col. Illustr. Trees & Shrubs Japan 221, pl. 65. 1960; Moldenke, Phytologia 8: 86--88. 1961; Hocking, Excerpt. Bot. A.5: 42. 1962; F. R. Fosberg, Bishop Mus. Occas. Papers 23 (2): 41--42. 1962; Nobuhara, Okada, & Fujihira, Jap. Journ. Ecol. 12: 101--103, 105, & 107. 1962; Liu, Illustr. Nat. & Introd. Lign. Pl. Taiwan 2: 1231, pl. 1039. 1962; M. J. Van Steenis-Kruseman, Fl. Males. Bull. 3: 695 & LI. 1962; Hatusima, Mem. South. Indust. Sci. Inst. Kagoshima Univ. 3 (1): 31. 1962; Li, Wood. Fl. Taiwan 832, 834, & 973. 1963; Chuang, Chao, Hu, & Kwan, Taiwania 1 (8): 54, 58, & 63, pl. 3, fig. 40. 1963; Taniguti, Amat. Herb. 24 (3): 9. 1963; Cave, Ind. Pl. Chromosome Numb. 2: 331. 1964; Neal, In Gard. Hawaii, ed. 2, 728, fig. 277. 1965; Backer & Bakh., Fl. Java 2: 604. 1965; Ohwi, Fl. Jap. 765. 1965; Hatusima, Mem. Fac. Agr. Kagoshima Univ. 5 (3): 47--48. 1966; Nobuhara, Journ. Jap. Bot. 19: 326--328, 330, 332--334, 336--338, 341--345, & 348. 1967; Moldenke, Résumé Suppl. 15: 25. 1967; Moldenke, Phytologia 15: 267 (1967), 15: 472 (1968), and 16: 495. 1968.

Additional & emended illustrations: Hook. & Arn., Bot. Beech. Voy. pl. 47. 1836; Nakai, Trees & Shrubs Indig. Jap., ed. 1, fig. 190. 1922; J. Matsumura, [Bot. & Zool.] 10: 288, fig. 125. 1942; Kitamura & Okamoto, Col. Illustr. Trees & Shrubs Japan pl. 65 [in color]. 1960; Chuang, Chao, Hu, & Kwan, Taiwania 1 (8): 63, pl. 3, fig. 40. 1963; Neal, In Gard. Hawaii, ed. 2, 728, fig. 277. 1965.

Recent collectors and writers describe this plant as a procumbent or ascending, creeping shrub, 6—30 cm. tall, or a woody trailing vine, the whole "plant with stinky odor", the main stem 1—2 m. long, often entirely buried in the sand from which only the flowering branchlets emerge, densely gray-white puberulent throughout; stems creeping, copiously rooting at the nodes, emitting many, erect, short, flowering branchlets; branches 4-angled; leaves 1-foliolate; petioles 1.5—3.5 mm. long ["cm" by error in Backer & Bakh. (1965)]; leaflet-blades herbaceous, broadly ovate or broadly elliptic to oval-elliptic-obovate, 1.5—5 cm. long, 1.3—3.5 cm. wide, obtuse to rounded at the apex, entire (or a few 2- or 3-partite), abruptly acute at the base, green and thinly puberulent above, densely grayish-puberulent beneath or densely white-tomentose especially beneath; panicles terminal, narrow, 1—9 cm. long, densely flowered, with very short branches; peduncles 1—4 cm. long; cymes 1—4-flowered, the lower ones often in the upper axils of the leaves; corolla blue, light-blue, or bluish-violet to purple-blue, purple, deep-purple, lavender, or red, about 13 mm. long, from the insertion of the stamens inside up to half the length of the lower lip densely white-hairy, silky-pubescent on the outer surface, the tube about 7 mm. long, the median segment of the lower lip about 5 mm. long; calyx greenish, silky-pubescent; style about 15 mm. long; bases of the filaments villous; fruit drupaceous, globose, dry, black, 5—7 mm. wide, the lower half enclosed by the persistent fruiting-calyx; pyrenes corky.

The corolla is described as having been "bluish-white" on F. R. Fosberg 8881, "purple" on Hurusawa 202, "blue" on H. L. Porter 3 and E. H. Wilson 10978, "deep-purple" on Ichikawa 200661, "red" on Tsang s.n. [Herb. Lingnan Univ. 16649], "lavender" on R. C. Ching 1967, "light-blue" on McClure s.n. [Herb. Lingnan Univ. 13095], and "purple-blue" on Liang 62926. Cave (1958) reports the haploid chromosome number as 16.

It should be noted here that the V. trifolia of Linnaeus the elder is a valid species, with the homonym ascribed to Linnaeus the younger as a synonym, while the V. trifolia of Graham is V. negundo L., that accredited to Moon is V. altissima L. f., that of Sessé & Mociffo is V. mollis H.B.K., and that ascribed to Vahl is V. triflora Vahl.

Vitex trifolia var. simplicifolia has been collected on sandy beaches, in sandy places by the sea, on loamy seashores, and along rocky roadsides, blooming from July to September. Fosberg (1962) and Corner (1939) feel that the plant should be called V. ovata Thunb., and in this they are followed by Backer & Bakhuizen van den Brink (1965) who note "Ridley....states that he saw specimens, transplanted into the interior, develop into V. trifolia. If this statement proves correct, V. ovata has to be considered an edaphic form of V. trifolia....I never saw any transitional form, nor were such forms ever observed by Corner."